INDEPENDENT ORBITER ASSESSMENT

ANALYSIS OF THE
ELECTRICAL POWER
DISTRIBUTION AND CONTROL
SUBSYSTEM
Vol. 1 of 2

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MCDONNELL DOUGLAS ASTRONAUTICS COMPANY HOUSTON DIVISION

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INDEPENDENT ORBITER ASSESSMENT
ANALYSIS OF THE ELECTRICAL POWER DISTRIBUTION
AND CONTROL SUBSYSTEM

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Independent Orbiter Assessment Analysis of the EPD&C Subsystem

1.0 EXECUTIVE SUMMARY

The McDonnell Douglas Astronautics Company (MDAC) was selected in June 1986 to perform an Independent Orbiter Assessment (IOA) of the Failure Modes and Effects Analysis (FMEA) and Critical Items List (CIL). Direction was given by the STS Orbiter and GFE Projects Office to perform the hardware analysis using the instructions and ground rules defined in NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986. The IOA approach features a top-down analysis of the hardware to determine failure modes, criticality, and potential critical items. To preserve independence, this analysis was accomplished without reliance upon the results contained within the NASA FMEA/CIL documentation. This report documents (Appendix C) the independent analysis results corresponding to the Orbiter Electrical Power Distribution and Control (EPD&C) hardware.

The EPD&C hardware performs the functions of distributing, sensing, and controlling 28 volt DC power and of inverting, distributing, sensing, and controlling 117 volt 400 Hz AC power to all Orbiter subsystems from the three fuel cells in the Electrical Power Generation (EPG) subsystem. The EPD&C subsystem hardware components were grouped and analyzed according to their physical location in their hardware assemblies, as follows:

- o Main DC Distribution Assemblies (MDDA) 1, 2, and 3
- o Mid Power Control Assemblies (MPCA) 1, 2, and 3
- o Mid Motor Control Assemblies (MMCA) 1, 2, 3, and 4
- o Aft Power Control Assemblies (APCA) 4, 5, and 6
- o Aft Power Control Assemblies (APCA) 1, 2, and 3
- o Aft Load Control Assemblies (ALCA) 1, 2, and 3
- o Aft Motor Control Assemblies (AMCA) 1, 2, and 3
- o Forward Power Control Assemblies (FPCA) 1, 2, and 3
- o Forward Load Control Assemblies (FLCA) 1, 2, and 3
- o Forward Motor Control Assemblies (FMCA) 1, 2, and 3
- o AC Generation & Distribution Assemblies (AGDA) 1, 2, and 3
- o Flight Deck Panel Controls & Displays (FDPC&D)
- o Mid Deck Panel Controls & Displays (MDPC&D)
- o Master Event Controllers, Annunciator Control Assemblies, and Current Sensors (MISC)

The IOA analysis process utilized available EPD&C hardware drawings and schematics for defining hardware assemblies, components, and hardware items. Each level of hardware was evaluated and analyzed for possible failure modes and effects. Criticality was assigned based upon the severity of the effect for each failure mode.

Figure 1 presents a summary of the failure criticalities for each of the fourteen subdivisions of the EPD&C. A summary of the number of failure modes, by criticality, is also presented below with Hardware (HW) criticality first and Functional (F) criticality second.

| Summary | of | IOA | Fa | ilure | Modes | Ву | Cri | ticali | ty (H | W/F) |
|--------------|----|-----|-----|-------|-------|----|-----|--------|-------|-------|
| Criticality | : | 1/1 | - [| 2/1R | 2/2 | 3/ | /1R | 3/2R | 3/3 | TOTAL |
| Number | : | 12 | 2 | 136 | | 47 | 78 | 69 | 976 | 1671 |

For each failure mode identified, the criticality and redundancy screens were examined to identify critical items. A summary of Potential Critical Items (PCIs) is presented as follows:

| + | Summary o | E | IOA | Po | te: | ntial | Criti | cal | Ite | ms (| HW/F) | -+ |
|---|-------------|---|-----|-----|------|-------|-------|-----|-----|------|-------|----------------|
| | Criticality | : | | 1/1 | | 2/1R | 2/2 | 3/ | /1R | 3/2R | TOTAL | - |
| | Number | : | | 12 | | 136 | - | 29 | 92 | 28 | 468 | |

Of the one thousand six hundred seventy-one (1671) failure modes analyzed, nine (9) single failures were determined to result in loss of crew or vehicle. Three (3) single failures unique to intact abort were determined to result in possible loss of the crew or vehicle. A possible loss of mission could result if any of one hundred thirty-six (136) single failures occurred. Six (6) of the criticality 1/1 failures are in two rotary and two pushbutton switches that control External Tank and Solid Rocket Booster separation. The other six (6) criticality 1/1 failures are fuses, one each per Aft Power Control Assembly (APCA) 4, 5, and 6 and one each per Forward Power Control Assembly (FPCA) 1, 2, and 3, that supply power to certain Main Propulsion System (MPS) valves and Forward Reaction Control System (RCS) circuits.

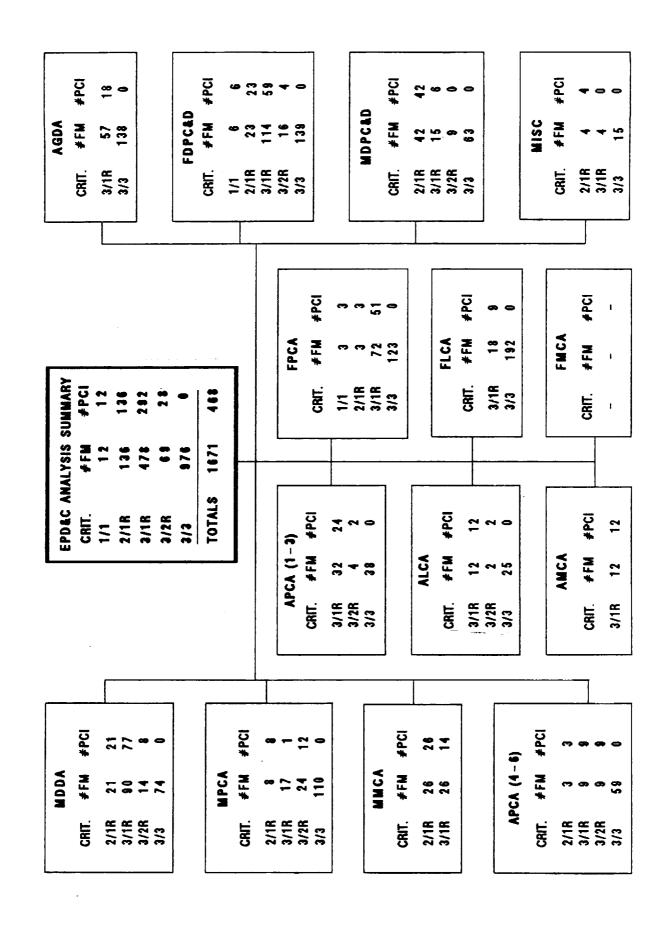


Figure 1 - EPD&C OVERVIEW ANALYSIS SUMMARY

2.0 INTRODUCTION

2.1 Purpose

The 51-L Challenger accident prompted the NASA to readdress safety policies, concepts, and rationale being used in the National Space Transportation System (NSTS). The NSTS Office has undertaken the task of reevaluating the FMEA/CIL for the Space Shuttle design. The MDAC is providing an independent assessment of the Orbiter FMEA/CIL reevaluation results for completeness and technical accuracy.

2.2 Scope

The scope of the independent FMEA/CIL assessment activity encompasses those Shuttle Orbiter subsystems and GFE hardware identified in the Space Shuttle Independent FMEA/CIL Assessment Contractor Statement of Work. Each subsystem analysis addresses hardware, functions, internal and external interfaces, and operational requirements for all mission phases.

2.3 Analysis Approach

The independent analysis approach is a top-down analysis utilizing as-built drawings to breakdown the respective subsystem into components and low-level hardware items. Each hardware item is evaluated for failure mode, effects, and criticality. These data are documented in the respective subsystem analysis report, and are used to assess the NASA and Prime Contractor FMEA/CIL reevaluation results. The IOA analysis approach is summarized in the following Steps 1.0 through 3.0. Step 4.0 summarizes the assessment of the NASA and Prime Contractor FMEAs/CILs that is performed and documented at a later date.

- Step 1.0 Subsystem Familiarization
 - 1.1 Define subsystem functions
 - 1.2 Define subsystem components
 - 1.3 Define subsystem specific ground rules and assumptions
- Step 2.0 Define subsystem analysis diagram
 - 2.1 Define subsystem
 - 2.2 Define major assemblies
 - 2.3 Develop detailed subsystem representations
- Step 3.0 Failure events definition
 - 3.1 Construct matrix of failure modes
 - 3.2 Document IOA analysis results

Step 4.0 Compare IOA analysis data to NASA FMEA/CIL

- 4.1 Resolve differences
- 4.2 Review in-house 4.3 Document assessment issues
- 4.4 Forward findings to Project Manager

EPD&C Ground Rules and Assumptions 2.4

The EPD&C ground rules and assumptions used in the IOA are defined in Appendix B.

3.0 SUBSYSTEM DESCRIPTION

3.1 Design and Function

The EPD&C subsystem starts at the outputs of the three fuel cells in the EPG subsystem and ends at the using subsystems. DC power from each fuel cell is routed through two wires to one of three main and one of three essential busses. Each main bus can be tied to either of the other two main busses through power contactors and each essential bus is also connected to the other two main busses through diodes and Remote Power Controllers (RPCs). Nine control busses are connected to the three main busses through diodes and RPCs with each control bus receiving power from two main busses. A control bus can be connected to the remaining main bus when the appropriate circuit breaker is closed. Each one of three Orbital Maneuvering Subsystem/Reaction Control Subsystem (OMS/RCS) DC busses are powered by two of three main busses through RPCs and diodes. Three DC busses to the payload (Payload Cabin, Payload Aux, and Payload Emergency busses) are powered through RPCs and diodes from Main DC Busses A and B. Larger payload DC loads are powered through power contactors from Main DC busses B and C and Fuel Cell #3.

AC power is generated by connecting each main DC bus to three of nine single-phase invertors, resulting in three three-phase AC busses. The three AC busses are connected to various loads through circuit breakers. These AC busses are further connected to three RCS/OMS AC busses, three Payload Bay Door (PLBD) AC busses, and three Payload Bay Mechanical (PLBM) AC busses.

3.2 Assemblies Description

The EPD&C hardware performs the functions of distributing, sensing, and controlling DC power and inverting, distributing, sensing, and controlling AC power throughout the Orbiter. The EPD&C subsystem is broken down and described by the following fourteen assembly types:

1. Three (3) Main DC Distribution Assemblies (MDDAs) connect the fuel cell outputs through power contactors to the three main DC busses and through diodes and fuses via Panel R1A1 to the three essential busses. Power contactors on the MDDAs allow tying the main busses together. Bus voltage and current levels can be measured directly on Panel F9A2 meters or observed indirectly via General Purpose Computer (GPC) output display via signal conditioners and Multiplexer/Demultiplexers (MDMs). Main and essential DC bus power is connected through fuses to the other assemblies in the system.

- 2. Three (3) Mid Power Control Assemblies (MPCAs) contain RPCs to connect main DC bus power to MMCAs, Payload busses (Cabin, Aux, and Emergency), and to essential busses. There are also RPCs which connect Pre-Flight Test Busses to MDDAs which allow Ground Support Equipment (GSE) control and monitor of fuel cells and main DC bus ties.
- 3. Four (4) Mid Motor Control Assemblies (MMCAs) contain relays to connect the three PLBM and three PLBD AC busses to the three main AC busses. DC power is also routed to the Payload Bay motors and relays.
- 4. Three (3) Aft Power Control Assemblies (APCA-4, APCA-5, and APCA-6) contain RPCs that connect power to the three RCS/OMS DC busses, AMCAs, essential busses, and control GSE power to the MMDAs. GSE power is distributed from these assemblies through power contactors. DC power is also routed through fused connections to the ALCAs and the other three APCAs.
- 5. Three (3) Aft Power Control Assemblies (APCA-1, APCA-2, and APCA-3) contain RPCs that power Master Event Controllers #1 and #2. Fused DC power to the Payload Bay is routed through these assemblies also.
- 6. Three (3) Aft Load Control Assemblies (ALCAs) connect Main DC Bus power to various subsystems. They also contain Hybrid Device Controllers to connect GSE power to the essential busses.
- 7. Three (3) Aft Motor Control Assemblies (AMCAs) connect Main DC Bus power through diodes to the three RCS/OMS DC busses. They also contain the origin of the RCS/OMS AC busses.
- 8. Three (3) Forward Power Control Assemblies (FPCAs) contain the circuitry to connect the three main DC busses to the nine control busses. DC power is provided to the AC inverters through fuses and latching relays, RPCs are used to control DC power to FMCAs and fused DC power is provided to the FLCAs.
- 9. Three (3) Forward Load Control Assemblies (FLCAs) contain Hybrid Device Controllers to control the nine AC inverters and to allow GSE control of the same inverters.
- 10. Three (3) Forward Motor Control Assemblies (FMCAs) route AC and DC power to various subsystems.
- 11. Three (3) AC Generation & Distribution Assemblies (AGDAs) provide control and power circuits to the nine AC inverters. Over/under voltage sensors allow inverters to be monitored and disconnected from the AC Bus system.

- 12. The Flight Deck Panel Controls and Displays (FDPC&D) perform the switching and certain monitoring functions for the routing of power to all subsystems. These panels include L4, R13, R15, R1, R2, 013, 014, 015, 016, 017, 019, F9, F1, F6, C3, All, Al2, Al5, and A6.
- 13. The Mid Deck Panel Controls and Displays (MDPC&D) perform the switching and monitoring functions for power to the inverters and various subsystems. These panels include M030F, M052J, M013Q, and MA73C.
- 14. The Master Event Controllers #1 and #2, certain channels in the Annunciator Control Assemblies, and Current Sensors are grouped in this last category for convenience.

3.3 Hierarchy

Figure 2 illustrates the hierarchy of the EPD&C hardware and the corresponding subassemblies.

ELECTRICAL POWER DISTRIBUTION BLOCK DIAGRAM

Figure 2 - EPD&C SUBSYSTEM OVERVIEW

4.0 ANALYSIS RESULTS

Detailed analysis results for each of the identified failure modes are presented in Appendix C. Table I presents a summary of the failure criticalities for each of the fourteen major subdivisions of the EPD&C. Further discussion of each of these subdivisions and the applicable failure modes is provided in subsequent paragraphs.

| TABLE I Summary of IOA Failure Modes and Criticalities | | | | | | | |
|--|----------|------------|--------------|------|--------------|----------|-----------|
| Criticality: | 1/1 | 2/1R | 2/2 | 3/1R | 3/2R | 3/3 | TOTAL |
| MDDA | - | 21 | - | 90 | 14 | 74 | 199 |
| MPCA | - | 8 | - | 17 | 24 | 110 | 159 |
| MMCA | - | 26 | _ | 26 | - | – | 52 |
| APCA (4-6) | 3 | j 9 | - | 9 | – | 59 | 80 |
| APCA (1-3) | i - | i – | – | 32 | 4 | 38 | 74 |
| ALCA | - | i – | - | 12 | 2 | 25 | 39 |
| AMCA | i – | – | i - i | 12 | - | – | 12 |
| FPCA | 3 | 3 | - | 72 | – | 123 | 201 |
| FLCA | – | – | - | 18 | - | 192 | 210 |
| FMCA | – | - | - 1 | _ | – | - | j - |
| AGDA | - | – | - | 57 | – | 138 | 195 |
| FDPC&D | 6 | 23 | i - i | 114 | 16 | 139 | 298 |
| MDPC&D | - | 42 | - | 15 | 9 | 63 | 129 |
| MISC | - | 4 | – i | 4 | - | 15 | 23 |
| | | | | | | | |
| | | | | | | | |
| TOTAL | 12 | 136 | - | 478 | 69 | 976 | 1671 |

Of the one thousand six hundred seventy-one (1671) failure modes analyzed, nine (9) single failures were determined to result in loss of crew or vehicle. Three (3) single failures unique to intact abort were determined to result in possible loss of the crew or vehicle. A possible loss of mission could result if any of one hundred thirty-six single failures occurred. A summary of the potential critical items is presented in Table II. Appendix D presents a cross reference between each potential critical item (PCI) and a specific worksheet in Appendix C.

| TABLE II Su | mmary o | of IOA | Potent: | ial Crit | ical I | ems |
|--------------|----------------|----------|----------------|----------|--------|-------|
| Criticality: | 1/1 | 2/1R | 2/2 | 3/1R | 3/2R | TOTAL |
| MDDA | - | 21 | - | 77 | 8 | 106 |
| MPCA | j - j | 8 | – | 1 | 12 | 21 |
| MMCA | i - i | 26 | - | 14 | _ | 40 |
| APCA (4-6) | j 3 j | 9 | – | 9 | _ | 21 |
| APCA (1-3) | j - i | _ | – | 24 | 2 | 26 |
| ALCA | i - i | - | i - | 12 | 2 | 14 |
| AMCA | i - i | - | i - | 12 | _ | 12 |
| FPCA | 3 | 3 | – | 51 | _ | 57 |
| FLCA | i - i | _ | – | 9 | _ | 9 |
| FMCA | j - i | | - | _ | _ | _ |
| AGDA | j - j | - | i - | 18 | _ | 18 |
| FDPC&D | j 6 i | 23 | i - | 59 | 4 | 92 |
| MDPC&D | j - i | 42 | – | 6 | - | 48 |
| MISC | i - i | 4 | j - | - | - | 4 |
| | <u>i</u> i | <u> </u> | İ | <u> </u> | | |
| TOTAL | 12 | 136 | - | 292 | 28 | 468 |

4.1 Analysis Results - Main DC Distribution Assemblies

There are one hundred ninety-nine (199) failure modes identified for the three MDDAs. Of these, twenty-one (21) are criticality 2/1R, ninety (90) are criticality 3/1R, fourteen (14) are criticality 3/2R, and seventy-four (74) are criticality 3/3. One hundred six (106) failures are identified as Potential Critical Items (PCIs). These failures are listed in Appendix D.

4.2 Analysis Results - Mid Power Control Assemblies

There are one hundred fifty-nine (159) failure modes identified for the three MPCAs. Of these, eight (8) are criticality 2/1R, seventeen (17) are criticality 3/1R, twenty-four (24) are criticality 3/2R, and one hundred ten (110) are criticality 3/3. Twenty-one (21) failures are identified as PCIs. These failures are listed in Appendix D.

4.3 Analysis Results - Mid Motor Control Assemblies

There are fifty-two (52) failure modes identified for the four MMCAs. Of these, twenty-six (26) are criticality 2/1R and twenty-six (26) are criticality 3/1R. Forty (40) failures are identified as PCIs. These failures are listed in Appendix D.

4.4 Analysis Results - Aft Power Control Assemblies 4, 5, and 6

There are eighty (80) failure modes identified for these three APCAs. Of these, three (3) are identified as criticality 1/1, nine (9) are criticality 2/1R, nine (9) are criticality 3/1R, and fifty-nine (59) are criticality 3/3. Twenty-one (21) failures are identified as PCIs and are listed in Appendix D. The three criticality 1/1 failures are fuses, one per APCA, that supply power to critical MPS valves.

4.5 Analysis Results - Aft Power Control Assemblies 1, 2, and 3

There are seventy-four (74) failure modes identified for these three APCAs. Of these, thirty-two (32) are criticality 3/1R, four (4) are criticality 3/2R, and thirty-eight (38) are criticality 3/3. Twenty-six (26) failures are identified as PCIs and are listed in Appendix D.

4.6 Analysis Results - Aft Load Control Assemblies

There are thirty-nine (39) failure modes identified for the ALCAs. Of these, twelve (12) are criticality 3/1R, two (2) are criticality 3/2R, and twenty-five (25) are criticality 3/3. Fourteen (14) failures are identified as PCIs and are listed in Appendix D.

4.7 Analysis Results - Aft Motor Control Assemblies

There are twelve (12) failure modes identified for the AMCAs. They are all criticality 3/1R and PCIs. They are listed in Appendix D.

4.8 Analysis Results - Forward Power Control Assemblies

There are two hundred one (201) failure modes identified for the FPCAs. Of these, three (3) are criticality 1/1, three (3) are criticality 2/1R, seventy-two (72) are criticality 3/1R, and one hundred twenty-three (123) are criticality 3/3. Fifty-seven (57) failures are identified as PCIs and are listed in Appendix D. The three criticality 1/1 failures are fuses, one per FPCA, that supply power to the forward RCS and are only criticality 1/1 during an intact ABORT. During normal flight these failures are criticality 3/1R.

4.9 Analysis Results - Forward Load Control Assemblies

There are two hundred ten (210) failure modes identified for the FLCAs. Of these, eighteen (18) are criticality 3/1R and one hundred ninety-two (192) are criticality 3/3. Nine (9) failures are identified as PCIs and are listed in Appendix D.

- 4.10 Analysis Results Forward Motor Control Assemblies
 There are no failure modes identified for the FMCAs.
- 4.11 Analysis Results AC Generation & Distribution Assemblies

There are one hundred ninety-five (195) failure modes identified for the AGDAs. Of these, fifty-seven (57) are criticality 3/1R and one hundred thirty-eight (138) are criticality 3/3. Eighteen (18) failures are identified as PCIs and are listed in Appendix D.

4.12 Analysis Results - Flight Deck Panel Controls & Displays

There are two hundred ninety-eight (298) failure modes identified for the FDPC&D. Of these, six (6) are criticality 1/1, twenty-three (23) are criticality 2/1R, one hundred fourteen (114) are criticality 3/1R, sixteen (16) are criticality 3/2R, and one hundred thirty-nine (139) are criticality 3/3. Ninety-two (92) failure modes are identified as PCIs and are listed in Appendix D. The six (6) criticality 1/1 failures are switches that control External Tank and Solid Rocket Booster separation.

4.13 Analysis Results - Mid Deck Panel Controls & Displays

There are one hundred twenty-nine (129) failure modes identified for the MDPC&D. Of these, forty-two (42) are criticality 2/1R, fifteen (15) are criticality 3/1R, nine (9) are criticality 3/2R, and sixty-three (63) are criticality 3/3. Forty-eight (48) failures are identified as PCIs and are listed in Appendix D.

4.14 Analysis Results - MECs, ACAs, and Current Sensors

There are twenty-three (23) failure modes identified for the MISC group. Of these, four (4) are criticality 2/1R, four (4) are criticality 3/1R and fifteen (15) are criticality 3/3. Four (4) failures are identified as PCIs and are listed in Appendix D.

5.0 REFERENCES

Reference documentation available from NASA and Rockwell was used in the analysis. The documentation used included the following:

- 1. VS70-976102 Integrated System Schematic Electrical Power Distribution and Control Subsystem, Revision 14, 2 July 1986.
- 2. VS70-948102 Integrated System Schematic Solid Rocket Booster Subsystem, Revision 14, 26 September 1985.
- 3. JSC-11174 Space Shuttle Systems Handbook, Volumes 1 and 2, Mission Operations Directorate, Systems Division, Revision C, DCN-5, 13 September 1985.
- 4. VS70-941102 Integrated System Schematic Main Propulsion System, Revision E, 26 October 1979.
- 5. VS70-943102 Integrated System Schematic Aft Propulsion System, OMS/RCS, Revision D08, 20 May 1986.
- 6. VS70-942102 Integrated System Schematic Forward Reaction Control System, Revision HO2, 19 September 1984.
- 7. JSC-19041 Shuttle Booster: Master Events Controller Overview, 1 October 1984.
- 8. SSR10-26 EPS Bus Loss Listing, Revision 025, 30 September 1985.
- 9. JSC 12820, STS Operational Flight Rules, Final PCN-3, 28 June 1985.
- 10. NSTS 22206, Instructions for Preparation of FMEA and CIL, 10 October 1986.

APPENDIX A ACRONYMS

```
AOA
           - Abort-Once-Around
ATO
           - Abort-To-Orbit
CIL
           - Critical Items List
CRIT
           - Criticality
CWS
           - Caution and Warning System
ECLSS
           - Environmental Control and Life Support System
             (Subsystem)
EPDC
           - Electrical Power Distribution and Control
EPG
           - Electrical Power Generator
FC
           - Fuel Cell
FCP
           - Fuel Cell Power (Plant)
FMEA
           - Failure Modes and Effects Analysis
FSSR
           - Flight Systems Software Requirements
GAS
           - Get-Away Special
GPC
           - General Purpose Computer
GSE
           - Ground Support Equipment
           - Hybrid Driver Controller
HDC
           - Independent Orbiter Assessment
IOA
MDAC
           - McDonnell Douglas Astronautics Company
MDM

    Multiplexer/Demultiplexer

NA
           - Not Applicable
NASA
           - National Aeronautics and Space Administration
NSTS
           - National Space Transportation System
OF
           - Operational Forward
OMRSD
           - Operational Maintenance Requirements &
             Specifications Document
PCA
           - Power Control Assembly
           - Potential Critical Item
PCI
PLS
           - Primary Landing Site
PRCB
           - Program Requirements Control Board
PRSDS
           - Power Reactant Storage and Distribution System
PSA
           - Power Section Assembly
           - Reaction Control System
RCS
RI
           - Rockwell International
RPC
           - Remote Power Controller
RTLS
           - Return-to-Landing Site
STS
           - Space Transportation System
TAL
           - Transatlantic Abort Landing
TCS
           - Thermal Control System (Subsystem)
WRS
           - Water Removal Subsystem
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APPENDIX B

DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

- B.1 Definitions
- B.2 Project Level Ground Rules and AssumptionsB.3 Subsystem-Specific Ground Rules and Assumptions

APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.1 Definitions

Definitions contained in NSTS 22206, Instructions For Preparation of FMEA/CIL, 10 October 1986, were used with the following amplifications and additions.

INTACT ABORT DEFINITIONS:

RTLS - begins at transition to OPS 6 and ends at transition
to OPS 9, post-flight

TAL - begins at declaration of the abort and ends at transition to OPS 9, post-flight

AOA - begins at declaration of the abort and ends at transition to OPS 9, post-flight

ATO - begins at declaration of the abort and ends at transition to OPS 9, post-flight

<u>CREDIBLE (CAUSE)</u> - an event that can be predicted or expected in anticipated operational environmental conditions. Excludes an event where multiple failures must first occur to result in environmental extremes

CONTINGENCY CREW PROCEDURES - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

<u>EARLY MISSION TERMINATION</u> - termination of onorbit phase prior to planned end of mission

EFFECTS/RATIONALE - description of the case which generated the
highest criticality

<u>HIGHEST CRITICALITY</u> - the highest functional criticality determined in the phase-by-phase analysis

<u>MAJOR MODE (MM)</u> - major sub-mode of software operational sequence (OPS)

MC - Memory Configuration of Primary Avionics Software System (PASS)

MISSION - assigned performance of a specific Orbiter flight with payload/objective accomplishments including orbit phasing and altitude (excludes secondary payloads such as GAS cans, middeck P/L, etc.)

MULTIPLE ORDER FAILURE - describes the failure due to a single cause or event of all units which perform a necessary (critical) function

OFF-NOMINAL CREW PROCEDURES - procedures that are utilized beyond the standard malfunction procedures, pocket checklists, and cue cards

OPS - software operational sequence

PRIMARY MISSION OBJECTIVES - worst case primary mission objectives are equal to mission objectives

PHASE DEFINITIONS:

PRELAUNCH PHASE - begins at launch count-down Orbiter power-up and ends at moding to OPS Major Mode 102 (liftoff)

<u>LIFTOFF</u> <u>MISSION</u> <u>PHASE</u> - begins at SRB ignition (MM 102) and ends at transition out of OPS 1 (Synonymous with ASCENT)

ONORBIT PHASE - begins at transition to OPS 2 or OPS 8 and ends at transition out of OPS 2 or OPS 8

DEORBIT PHASE - begins at transition to OPS Major Mode 301 and ends at first main landing gear touchdown

<u>LANDING/SAFING PHASE</u> - begins at first main gear touchdown and ends with the completion of post-landing safing operations

APPENDIX B DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

B.2 IOA Project Level Ground Rules and Assumptions

The philosophy embodied in NSTS 22206, Instructions for Preparation of FMEA/CIL, 10 October 1986, was employed with the following amplifications and additions.

1. The operational flight software is an accurate implementation of the Flight System Software Requirements (FSSRs).

RATIONALE: Software verification is out-of-scope of this task.

2. After liftoff, any parameter which is monitored by system management (SM) or which drives any part of the Caution and Warning System (C&W) will support passage of Redundancy Screen B for its corresponding hardware item.

RATIONALE: Analysis of on-board parameter availability and/or the actual monitoring by the crew is beyond the scope of this task.

3. Any data employed with flight software is assumed to be functional for the specific vehicle and specific mission being flown.

RATIONALE: Mission data verification is out-of-scope of this task.

4. All hardware (including firmware) is manufactured and assembled to the design specifications/drawings.

RATIONALE: Acceptance and verification testing is designed to detect and identify problems before the item is approved for use.

5. All Flight Data File crew procedures will be assumed performed as written, and will not include human error in their performance.

RATIONALE: Failures caused by human operational error are out-of-scope of this task.

6. All hardware analyses will, as a minimum, be performed at the level of analysis existent within NASA/Prime Contractor Orbiter FMEA/CILs, and will be permitted to go to greater hardware detail levels but not lesser.

RATIONALE: Comparison of IOA analysis results with other analyses requires that both analyses be performed to a comparable level of detail.

7. Verification that a telemetry parameter is actually monitored during AOS by ground-based personnel is not required.

RATIONALE: Analysis of mission-dependent telemetry availability and/or the actual monitoring of applicable data by ground-based personnel is beyond the scope of this task.

8. The determination of criticalities per phase is based on the worst case effect of a failure for the phase being analyzed. The failure can occur in the phase being analyzed or in any previous phase, whichever produces the worst case effects for the phase of interest.

RATIONALE: Assigning phase criticalities ensures a thorough and complete analysis.

9. Analysis of wire harnesses, cables, and electrical connectors to determine if FMEAs are warranted will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

10. Analysis of welds or brazed joints that cannot be inspected will not be performed nor FMEAs assessed.

RATIONALE: Analysis was substantially complete prior to NSTS 22206 ground rule redirection.

11. Emergency system or hardware will include burst discs and will exclude the EMU Secondary Oxygen Pack (SOP), pressure relief valves and the landing gear pyrotechnics.

RATIONALE: Clarify definition of emergency systems to ensure consistency throughout IOA project.

APPENDIX B - DEFINITIONS, GROUND RULES, AND ASSUMPTIONS

- B.3 EPD&C-Specific Ground Rules and Assumptions
 - 1. The failure modes of a resistor shorting (e.g. little or zero resistance) and shorting to ground are not considered for all resistors in this analysis.

RATIONALE: A shorted resistor will still conduct current to the connected device. All Orbiter electrical components in this subsystem have built-in over-current protection and will continue to operate. A resistor shorting to ground has the same effect as a resistor opening, that is no current will be conducted to the rest of the circuit.

The failure modes of most switches, relays, power contactors, hybrid device controllers and remote power controllers are either a) fails open or off or b) fails closed or on. The failure modes a) fails to transfer or b) inadvertent transfer are specified only when the controlled subsystem functions would be adversely effected and specifically cause a higher criticality rating.

RATIONALE: Criticalities are assigned based on hardware and functional effects. The major percentage of the above components are doubly or triply, redundant in hardware and function. The functional failure of a component has more weight in determining its criticality than the hardware failure. If a switch fails to transfer or inadvertently transfers, it is either failed on and closed or failed off and open.

3. The assumption stated in 22206 that all other subsystems are operational within specifications is not used in this analysis where one or more failures in these subsystems would raise the criticality of the component analyzed.

RATIONALE: Several subsystems in the Orbiter have never been or are not planned to be used in the near future during an actual flight. Examples include but are not limited to, the BFS, fuel cell shutdown and restart, DC bus ties, and RMS jettison. Criticalities are

assigned to the components which supply and control power to these functions as if they are required.

4. All components directly related to fuel cell operation are assigned criticalities based on only one fuel cell failing.

RATIONALE: The EPD&C/EPG analysis was conducted under the assumption that two fuel cells had already failed. Therefore, the highest criticalities on fuel cell operations have already been assigned.

APPENDIX C DETAILED ANALYSIS

This section contains the IOA analysis worksheets employed during the analysis of this subsystem. The information on these worksheets is intentionally similar to the FMEA's written by Rockwell and the NASA. Each of these sheets identifies the item being analyzed, and parent assembly, as well as the function. For each failure mode, the possible causes are outlined, and the assessed hardware and functional criticality for each mission phase is listed, as described in the Rockwell Desk Instructions 100-2G. Finally, effects are entered at the bottom of each sheet, and the worst case criticality is entered at the top.

LEGEND FOR IOA ANALYSIS WORKSHEETS

Hardware Criticalities :

- l = Loss of life or vehicle
 - = Loss of mission
- 3 = Non loss of life or vehicle or mission

Functional Criticalities:

- 1R = Redundant identical hardware components or redundant functional paths all of which, if failed, could cause loss of life or vehicle.
- 2R = Redundant identical hardware components or redundant functional paths all of which, if failed, could cause loss of mission.

Redundancy Screen A:

- 1 = Is Checked Out PreFlight
- 2 = Is Capable of Check Out Preflight
- 3 = Not Capable of Check Out PreFlight
- 4 = Do Not Know

Redundancy Screens B and C:

- P = Passed Screen
- F = Failed Screen
- NA = Not Applicable

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5000 MDAC ID: RPC, 7.5A (GSE MAIN A OFF) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) APCA - 4 4) RPC, 7.5A (GSE MAIN A OFF) 5) 6) 7) 8) 9) 05-6 CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
TTPTOFF: 3/3 TAL: 3/3 3/3 AOA: ATO: 3/3 ONORBIT: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134RPC1 PART NUMBER: MC450-0017-1075 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS ITEM IS USED ONLY DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76B24F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5001 ABORT: 3/3

ITEM: RPC, 7.5A (GSE MAIN A OFF)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) APCA 4
- 4) RPC, 7.5A (GSE MAIN A OFF)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | O1/11 1 C1 | | |
|-----------------|------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A134RPC1 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED ONLY DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76B24F

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5002 | HIGHEST | CRITICALITY FLIGHT: ABORT: | HDW/FUNC 3/3 3/3 |
|---|------------------|----------------------------------|------------------------|
| ITEM: RPC, 7.5A (GS) FAILURE MODE: FAILS OPEN | E MAIN A ON) | | ee . i |
| LEAD ANALYST: K. SCHMECKPEPE | R SUBSYS I | EAD: K. SCHME | CKPEPER |
| BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) APCA - 4 4) RPC, 7.5A (GSE MAIN A O 5) 6) 7) 8) 9) 05-6 | | | |
| · | DTMT431 TMTE4 | | |
| FLIGHT PHASE HDW/FU PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | RTI | us: 3/3 u: 3/3 u: 3/3 | . . |
| REDUNDANCY SCREENS: A [|) B[] | c [] | the transfer |
| LOCATION: 54V76A134RPC2 PART NUMBER: MC450-0017-107 CAUSES: PIECE PART STRUCTUR SHOCK, THERMAL STRESS, VIBRA EFFECTS/RATIONALE: THIS ITEM IS USED ONLY DURIN FLIGHT OPERATIONS. | AL FAILURE, CONT | | СН |
| | | | |

REFERENCES: 76B23F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5003 ABORT: 3/3

ITEM: RPC, 7.5A (GSE MAIN A ON)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) APCA 4
- 4) RPC, 7.5A (GSE MAIN A ON)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| 41/4 4 4 4 4 4 | | |
|----------------|--------------------------------------|---|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | | • |
| | HDW/FUNC 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A134RPC2 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED ONLY DURING GROUND C/O AND IS NOT CRITICAL FOR

FLIGHT OPERATIONS.

REFERENCES: 76B23F

| DATE: 3/1 SUBSYSTEM: EPD&C MDAC ID: 5004 | | FLI | CALITY HDW/FUNC GHT: 3/3 ORT: 3/3 |
|--|----------------------------------|------------------|---|
| ITEM: SW FAILURE MODE: FA | ITCH, MOTORIZED ILS OPEN | (GSE PWR CONTROL | رد (د |
| LEAD ANALYST: K. | CHMECKPEPER | SUBSYS LEAD: | K. SCHMECKPEPER |
| BREAKDOWN HIERARC 1) GSE POWER 2) PRE-FLT TEST 3) APCA - 4 4) SWITCH, MOTO 5) 6) 7) 8) | | ONTROL) | |
| 9) 05-6 | | | |
| PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: | 3/3 3/3 | A DADM | HDW/FUNC 3/3 3/3 3/3 3/3 |
| REDUNDANCY SCREEN | 3: A [] | B[] C | 1 |
| LOCATION: 54V PART NUMBER: MC4 CAUSES: CONTAMIN THERMAL STRESS, M | 55-0126-0001 ATION, PIECE PAR | r structural fai | |
| EFFECTS/RATIONALE THIS ITEM IS USED FLIGHT OPERATIONS | : ONLY DURING GRO | UND C/O AND IS N | OT CRITICAL FOR |

REFERENCES: 76B23D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5005 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (GSE PWR CONTROL)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) APCA 4
- 4) SWITCH, MOTORIZED (GSE PWR CONTROL)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A134S1
PART NUMBER: MC455-0126-0001

CAUSES: CONTAMINATION, PIÈCE PART STRUCTURAL FAILURE, VIBRATION, THERMAL STRESS, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED ONLY DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76B23D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5006 RESISTOR, 1.2K (TO GSE PWR CONT) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 1) PRE-FLT TEST BUS #1 2) 3) APCA - 4 4) RESISTOR, 1.2K (TO GSE PWR CONT) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT RTLS: 3/3 PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: TAL: AOA: 3/3 ONORBIT: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 B[] C[] REDUNDANCY SCREENS: A [] LOCATION: 54V76A134A1R55 PART NUMBER: RLR42C122GM CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATION.

REFERENCES: 76B22D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5007 ABORT: 2/1R

ITEM: FUSE, 200A TO MAIN DC DIST ASSY 1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) APCA 4
- 3) FUSE, 200A TO MAIN DC DIST ASSY 1

4)

5)

6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 54V76A134F1

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF REDUNDANCY COULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS. A SECOND FAILURE WOULD REMOVE POWER FROM HELIUM BLOWDOWN VALVES WHICH WOULD PREVENT PURGING THE AFT COMPARTMENTS OF POSSIBLY EXPLOSIVE GASSES.

REFERENCES: 76B22C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 2/1R SUBSYSTEM: EPD&C 2/1R ABORT: MDAC ID: 5008

FUSE, 200A TO MAIN DC DIST ASSY 1 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) APCA - 4
- 3) FUSE, 200A TO MAIN DC DIST ASSY 1

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 54V76A134F2

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF REDUNDANCY COULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS. A SECOND FAILURE WOULD REMOVE POWER FROM HELIUM BLOWDOWN VALVES WHICH WOULD PREVENT PURGING THE AFT COMPARTMENTS OF POSSIBLY EXPLOSIVE GASSES.

REFERENCES: 76B22C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC 3/3 SUBSYSTEM: EPD&C FLIGHT: MDAC ID: 5009 ABORT: 3/3 FUSE, 3A TO GSE MONITOR ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #1 2) 3) APCA - 4 FUSE, 3A TO GSE MONITOR 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134F17 PART NUMBER: MC451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT OPERATIONS.

REFERENCES: 76B22F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5010 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: 3/3 AOA: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A31R2 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76B20D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 MDAC ID: 5011 ABORT: RESISTOR, 5.1K 1/4W (TO GSE MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3

RTLS: 3/3 TAL: 3/3

LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31R3 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76B19C

| SUBS | : YSTEM: ! ID: | | · | HIGHEST | CRITICALITY FLIGHT: ABORT: | HDW/FUNC 3/3 3/3 |
|--------------|----------------------|-----------------------|-----------------------|-----------|----------------------------------|------------------------|
| ITEM FAIL | : URE MOD | RESISTO | OR, 5.1K 1/4W OPEN | (TO MDM | OF3) | - · · |
| LEAD | ANALYS | r: K. SCHMI | ECKPEPER | SUBSYS | LEAD: K. SCHM | IECKPEPER |
| 1) | MAIN DO | C DIST ASSY | Y #1 '4W (TO MDM O | F3) | | |
| 8) 9) | 05-6 | | | | | |
| | | | CRITICAL | LITIES | | |
| | FLIGHT 1 | PHASE | HDW/FUNC | ABORT | HDW/FUN | TC . |
| | | AUNCH: | 3/3 | RT | LS: 3/3 | |
| | | OFF: | 3/3 | TA | L: 3/3 | |
| | | BIT: | 3/3 | AO. | A: 3/3 | |
| | DEOR | 2TT• | 3/3 3/3 3/3 | ልጥ | 0: 3/3 | |
| | LAND | ING/SAFING: | : 3/3 | n. | J, 2 | |
| REDU | NDANCY S | SCREENS: | A [] | в [ј | c [] | |
| | | 40V76A31 | | | | |
| PART | NUMBER | RLR07C5 | LZGR | | | |
| CAUS | ES: CON | 10ITANIMATI | N, THERMAL STE | RESS, VIB | RATION, MECH | SHOCK |
| EFFE THIS | CTS/RATI MEASURI | CONALE: EMENT IS N | ON-CRITICAL F | OR FLIGHT | OPERATIONS. | |
| REFE | RENCES: | 76B16C | • | | | |

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: ABORT: 5013 RESISTOR, 5.1K 1/4W (TO MDM OF3) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 2) RESISTOR, 5.1K 1/4W (TO MDM OF3) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: TAL: LIFTOFF: 3/3 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] 40V76A31R10 LOCATION: PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76B13C

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5014 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|--|---|
| ITEM: RESISTOR, 1.2K 2W FAILURE MODE: FAILS OPEN | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) ESS BUS 1BC 4) RESISTOR, 1.2K 2W 5) 6) 7) 8) | |
| 9) 05-6 | • |
| CRITICAL | ITIES |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| REDUNDANCY SCREENS: A [] | B [] C [] |
| LOCATION: 40V76A31R9 PART NUMBER: RLR42C122GR | |
| CAUSES: CONTAMINATION, THERMAL STR | ESS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS ITEM SUPPLIES NON-CRITICAL MEA | SUREMENT CIRCUITS. |
| ž. | |

REFERENCES: 76B16B

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: MDAC ID: 5015 ABORT: 3/3 ITEM: RESISTOR, 2K 1/4W (TO C&W) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS A 2) MAIN DC DIST ASSY #1 RESISTOR, 2K 1/4W (TO C&W) 3) 4) 5) 6) 7)

CRITICALITIES

| | A | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31R7
PART NUMBER: RBR54L20000AR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

8) 9)

05-6

THIS MEASUREMENT IS NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76B9B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5016 RESISTOR, 14K 1/4W (TO C&W) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 3) RESISTOR, 14K 1/4W (TO C&W) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: 3/3 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A31R6 enal cath PART NUMBER: RBR54L14001AR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76B8B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5017 ABORT: 2/1R

ITEM: FUSE, 200A TO APCA-4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 200A TO APCA-4
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| O1/2 2 2 O1/ | | |
|--------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 2/1R |
| 3/1R | TAL: | 2/1R |
| 3/1R | AOA: | 2/1R |
| 2/1R | ATO: | 2/1R |
| 3/3 | | • |
| | HDW/FUNC 3/3 3/1R 3/1R 2/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 2/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F15

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF REDUNDANCY COULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS. A SECOND FAILURE WOULD REMOVE POWER FROM HELIUM BLOWDOWN VALVES WHICH WOULD PREVENT PURGING THE AFT COMPARTMENTS OF POSSIBLY EXPLOSIVE GASSES.

REFERENCES: 76B19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5018 ABORT: 2/1R

ITEM: FUSE, 200A TO APCA-4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 200A TO APCA-4
- 4)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | ŕ |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F16

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF REDUNDANCY COULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS. A SECOND FAILURE WOULD REMOVE POWER FROM HELIUM BLOWDOWN VALVES WHICH WOULD

WOULD PREVENT PURGING THE AFT COMPARTMENTS OF POSSIBLY EXPLOSIVE GASSES.

REFERENCES: 76B19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5019 ABORT: 3/3

ITEM: FUSE, 5A TO MPCA-1, FPCA-1, APCA-4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) CURRENT SENSOR EXCITATION #1,4,7
- 4) FUSE, 5A TO MPCA-1, FPCA-1, APCA-4
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31F14
PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS IS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76B19B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5020 ABORT: 2/1R

ITEM: SWITCH, MOTORIZED (DC TIE BUS MAIN A)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) SWITCH, MOTORIZED (DC TIE BUS MAIN A)

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31S1

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF CAPABILITY TO POWER ONE MAIN DC BUS FROM ANOTHER MAIN DC BUS. LOSS OF ALL CAPABILITY TO BUS TIE THE MAIN DC BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE AS CRITICAL LOADS COULD NOT BE POWERED (I.E. MPS VALVES).

REFERENCES: 76B17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5021 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (DC TIE BUS MAIN A)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) SWITCH, MOTORIZED (DC TIE BUS MAIN A)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | O1/T T T OF | | |
|-----------------|-------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31S1

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

NO EFFCT ON CREW/VEHICLE/MISSION AS TWO TIE BUS CONTACTORS MUST BE CLOSED BEFORE TWO BUSSES ARE TIED TOGETHER. THE LOSS OF ISOLATION CAPABILITY BETWEEN TWO BUSSES WOULD HAVE NO EFFECT AS THE TIE BUSSES ARE FUSE ISOLATED.

REFERENCES: 76B17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5022 ABORT: 3/1R

ITEM: FUSE, 150A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 150A TO DC TIE BUS

4)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|--------------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F26

PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76B16C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5023 ABORT: 3/1R

ITEM: FUSE, 150A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 150A TO DC TIE BUS

4)

5)

6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION:

40V76A31F27

PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76B16C

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/1R

SUBSYSTEM: EPD&C MDAC ID:

5024

ABORT:

3/1R

ITEM:

FUSE, 150A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER

SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- MAIN DC DIST ASSY #1 2)
- 3) FUSE, 150A TO DC TIE BUS

4)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION:

40V76A31F28

PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76B16C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5025 ABORT: 2/1R

ITEM: SWITCH, MOTORIZED (MAIN DC BUS A F/C PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) SWITCH, MOTORIZED (MAIN DC BUS A F/C PWR)
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31S2

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF 1/3 OF VEHICLE POWER AND LOSS OF POWER TO CERTAIN CRITICAL MPS VALVES. BUS TIE CAPABILITY EXITS TO POWER THE BUS. A FAILURE OF THE BUS TIE POWER SWITCH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LACK OF POWER TO CRITICAL MPS VALVES. LOSS OF ALL POWER (REDUNDANCY) WOULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76B14C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT: MDAC ID: 5026 SWITCH, MOTORIZED (MAIN DC BUS A F/C PWR) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 SWITCH, MOTORIZED (MAIN DC BUS A F/C PWR) 4) 5) 6) 7)

CRITICALITIES

| | ~== | |
|----------|----------------------|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | • |
| | 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31S2

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

8)

9)

05-6

EFFECTS/RATIONALE:

FIRST FAILURE WOULD HAVE NO EFFECT AS THIS IS NORMAL OPERATION. LOSS OF ALL ABILITY TO DISCONNECT FUEL CELLS FROM CRITICAL LOADS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76B14C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5027 ABORT: 3/3

ITEM: FUSE, 3A TO DC VOLTMETER

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 3A TO DC VOLTMETER
- 4)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

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|----------|-------------------|---|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | • |
| | 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31F29
PART NUMBER: ME451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW.

REFERENCES: 76B12C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: SUBSYSTEM: EPD&C FLIGHT: 3/1R 3/1R ABORT: MDAC ID: 5028 FUSE, 20A TO ESS BUS 1BC ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) FUSE, 20A TO ESS BUS 1BC 4) 5)

CRITICALITIES

| CRITICALITIES | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R - |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A31F31

PART NUMBER: ME451-0009-5200

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

6) 7) 8)

9)

05-6

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO THE ESS BUS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF ALL POWER TO ORBITER ESSENTIAL LOADS RESULTING IN LOSS OF CREW/VEHICLE.

REFERENCES: 76B12C

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5029 ITEM: FUSE, 3A TO DC VOLTMETER FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 FUSE, 3A TO DC VOLTMETER 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31F33
PART NUMBER: ME451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW.

REFERENCES: 76B10B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 2/1R SUBSYSTEM: EPD&C 2/1R ABORT: MDAC ID: 5030 SHUNT, DC AMMETER (TO F/C 1) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 SHUNT, DC AMMETER (TO F/C 1) 3) 4) 5) 6) 7) 8) 05-6 9)

CRITICALITIES

| V./ | | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | · 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31R11
PART NUMBER: MSB-501

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF POWER FROM FUEL CELL #1. LOSS OF ALL REDUNDANCY WOULD RESULT IN LOSS OF CREW/VEHICLE DUE TO LOSS OF ALL POWER.

A SECOND FAILURE IN THE BUS TIE CIRCUIT WOULD CAUSE LOSS OF POWER TO MPS HELIUM BLOWDOWN VALVES AND FORWARD RCS ISOL VALVES WHICH COULD CAUSE LOSS OF CREW/VEHICLE DUE TO AN EXPLOSIVE GAS MIXTURE IN THE AFT COMPARTMENT OR LACK OF CG CONTROL DURING ENTRY.

REFERENCES: 76B3B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5031 ABORT: 3/3

ITEM: RPC, 7.5A (DC TIE BUS MAIN A)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA 1
- 4) RPC, 7.5A (DC TIE BUS MAIN A)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| ~ | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC3 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B17E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5032 RPC, 7.5A (DC TIE BUS MAIN A) ITEM: FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) MPCA - 1 4) RPC, 7.5A (DC TIE BUS MAIN A) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: ATO: 3/3 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 3/3 DEORBIT: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC3 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

LANDING/SAFING: 3/3

EFFECTS/RATIONALE:

THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B17E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5033 ABORT: 3/3

ITEM:

RPC, 7.5A (DC TIE BUS MAIN A)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA 1
- 4) RPC, 7.5A (DC TIE BUS MAIN A)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC4
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B18E

3/11/87 HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5034 ITEM: RPC, 7.5A (DC TIE BUS MAIN A) FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) MPCA - 1 4) RPC, 7.5A (DC TIE BUS MAIN A) 6) 7) 8) 9) 05-6 CRITICALITIES ### CRITICALITIES

HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3

3/3 ATO: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25RPC4 PART NUMBER: MC450-0017-1075 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B18E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5035 ABORT: 3/3

ITEM: RPC, 7.5A (MAIN DC BUS A F/C PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA 1
- 4) RPC, 7.5A (MAIN DC BUS A F/C PWR)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC5
PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B14E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 5036 ABORT: 3/3 MDAC ID: RPC, 7.5A (MAIN DC BUS A F/C PWR) ITEM: FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) MPCA - 1 RPC, 7.5A (MAIN DC BUS A F/C PWR) 6) 7) 8) 05 - 69) CRITICALITIES
HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: AOA: ONORBIT: 3/3 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25RPC5 PART NUMBER: MC450-0017-2075 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B14E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5037 ABORT: 3/3

ITEM: RPC, 7.5A (MAIN DC BUS A F/C PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA 1
- 4) RPC, 7.5A (MAIN DC BUS A F/C PWR)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC6
PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B15E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5038 ITEM: RPC, 7.5A (MAIN DC BUS A F/C PWR) FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #1 2) 3) MPCA - 1 4) RPC, 7.5A (MAIN DC BUS A F/C PWR) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE
PRELAUNCH: PRELAUNCH: LIFTOFF: ONORBIT: 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25RPC6 PART NUMBER: MC450-0017-2075 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76B15E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5039 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA 1
- 4) DC TIE BUS MAIN A
- 5) DIODE, ISOLATION 35A
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| ~ | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A2CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76B17E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: EPD&C 5040 MDAC ID: DIODE, ISOLATION 35A ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) MPCA - 1 4) DC TIE BUS MAIN A 5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A2CR1 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76B17E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

SUBSYSTEM: EPD&C 3/3 FLIGHT: ABORT: 3/3 MDAC ID: 5041

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA - 1
- DC TIE BUS MAIN A 4)
- DIODE, ISOLATION 35A 5)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A2CR2 PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO

FLIGHT OPERATIONS.

REFERENCES: 76B18E

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5042 ITEM: DIODE, ISOLATION 35A FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) MPCA - 1 4) DC TIE BUS MAIN A 5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A2CR2 PART NUMBER: JANTX1N1188R THE CAPELLAND OF THE CONTROL OF CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS. REFERENCES: 76B18E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5043 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA 1
- 4) MAIN DC BUS A F/C POWER
- 5) DIODE, ISOLATION 35A
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A2CR3
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76B14E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5044 DIODE, ISOLATION 35A ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) MPCA - 1 4) MAIN DC BUS A F/C POWER 5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: AOA: ATO: 3/3 3/3 ONORBIT: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A2CR3 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS. REFERENCES: 76B14E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5045 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #1
- 3) MPCA 1
- 4) MAIN DC BUS A F/C POWER
- 5) DIODE, ISOLATION 35A
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • • • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A2CR4
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76B15E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5046 DIODE, ISOLATION 35A ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #1 2) 3) MPCA - 1 4) MAIN DC BUS A F/C POWER 5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: AOA: 3/3 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A2CR4 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS. REFERENCES: 76B15E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5047 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPDT (MAIN BUS TIE A)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #1
- 4) SWITCH, TOGGLE SPDT (MAIN BUS TIE A)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S13
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

IF A BUS TIE WERE REQUIRED, THIS FAILURE MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL MPS VALVES.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 2/1R SUBSYSTEM: EPD&C 2/1R ABORT: MDAC ID: 5048

SWITCH, TOGGLE SPDT (MAIN BUS TIE A) ITEM:

FAILURE MODE: INADVERTENT TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) RIAL PANEL
- 3) MAIN DC DIST ASSY #1
- 4) SWITCH, TOGGLE SPDT (MAIN BUS TIE A)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S13 PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

IF A BUS TIE WERE REQUIRED, THIS FAILURE MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL MPS VALVES.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5049 ABORT: 3/1R

ITEM: SWITCH, TOGGLE SPDT (FC/MN BUS A)

FAILURE MODE: FAILURE TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) RIAL PANEL
- 3) MAIN DC DIST ASSY #1
- 4) SWITCH, TOGGLE SPDT (FC/MN BUS A)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| | 41/2 2 2 411112 2 2 2 2 2 | | | |
|-----------------|---------------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73AlA1S10
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF CREW/VEHICLE IF FUEL CELL COULD NOT BE CONNECTED TO MAIN DC BUS AFTER A FUEL CELL RESTART.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5050 ABORT: 3/1R

ITEM: SWITCH, TOGGLE SPDT (FC/MN BUS A)

FAILURE MODE: INADVERTENT TRANSFERS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #1
- 4) SWITCH, TOGGLE SPDT (FC/MN BUS A)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S10
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF CREW/VEHICLE IF FUEL CELL WAS INADVERTENTLY DISCONNECTED FROM MAIN DC BUS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5051 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 5A THERMAL (MAIN A CONTR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) 013 PANEL
- 3) ESS BUS 1BC
- 4) CIRCUIT BREAKER, 5A THERMAL (MAIN A CONTR)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 33V73A13CB2 PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO PATHS TO CONTROL THE FUEL CELL TO MAIN DC BUS CONNECTION AND THE DC BUS TO BUS TIE CONNECTION. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF ALL POWER TO ORBITER SYSTEMS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5052 ITEM: CIRCUIT BREAKER, 5A THERMAL (MAIN A CONTR) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) 013 PANEL 3) ESS BUS 1BC 4) CIRCUIT BREAKER, 5A THERMAL (MAIN A CONTR) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 33V73A13CB2 PART NUMBER: MC454-0026-2050 BREE HERRING STORY CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: FIRST FAILURE WOULD CAUSE LOSS OF CIRCUIT PROTECTION. IN AN OVERLOAD CONDITION, MULTIPLE ORDER FAILURE, THE OVERLOAD CAN BE CORRECTED BY VARYING THE LOADING OF THE MAIN DC BUSSES THROUGH BUS TIES AND OTHER CIRCUIT BREAKERS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5053 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) 013 PANEL
- 3) MAIN DC BUS B
- 4) MAIN A CONTR
- 5) DIODE, ISOLATION 12A

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 33V73A13CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON CREW/VEHICLE UNTIL THIRD FAILURE AND A MAIN DC BUS OR FUEL CELL MUST BE ISOLATED AND MAIN DC BUSSES TIED. POSSIBLE LOSS OF CREW/VEHICLE COULD RESULT IN THIS CASE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 MDAC ID: 5054 ABORT: DIODE, ISOLATION 12A ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 013 PANEL 3) MAIN DC BUS B 4) MAIN A CONTR DIODE, ISOLATION 12A 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 33V73A13CR1 PART NUMBER: JANTX1N1204RA CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: LOSS OF REDUNDANT ISOLATION CAPABILITY BETWEEN ESS BUS AND MAIN BUS. CIRCUIT BREAKERS COULD BE OPENED IF ISOLATION REQUIRED. NO EFFECT ON CREW/MISSION/VEHICLE. REFERENCES: 76B19H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5055 ABORT: 3/3

ITEM: DIODE, ISOLATION 12A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) 013 PANEL
- 3) ESS BUS 1BC
- 4) MAIN A CONTR
- 5) DIODE, ISOLATION 12A

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A13CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF REDUNDANT ISOLATION CAPABILITY BETWEEN ESS BUS AND MAIN BUS. CIRCUIT BREAKERS COULD BE OPENED IF ISOLATION REQUIRED. NO EFFECT ON CREW/MISSION/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT: MDAC ID: 5056

DIODE, ISOLATION 12A ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) 013 PANEL
- 3) ESS BUS 1BC
- 4) MAIN A CONTR 5) DIODE, ISOLATION 12A

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 33V73A13CR2 PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON CREW/VEHICLE UNTIL THIRD FAILURE AND A MAIN DC BUS OR FUEL CELL MUST BE ISOLATED AND MAIN DC BUSSES TIED. POSSIBLE LOSS OF CREW/VEHICLE COULD RESULT IN THIS CASE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5057 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 5A (MN A CONTR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) 015 PANEL
- 4) CIRCUIT BREAKER, 5A (MN A CONTR)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| ~ | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 33V73A15CB36
PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF BACKUP POWER FOR THE CONTROL OF FUEL CELL POWER TO THE MAIN DC BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76B20G

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5058 CIRCUIT BREAKER, 5A (MN A CONTR) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) 015 PANEL 4) CIRCUIT BREAKER, 5A (MN A CONTR) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: TAL: 3/3 AOA: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 33V73A15CB36 PART NUMBER: MC454-0026-2050 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76B20G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5059 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) CBS FOR CONT BUS BC1, BC2, BC3 AND TV AND RADIOS
- 5) FUSE, 35A
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A31F18
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76C20H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5060 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) CBS FOR SIG COND, MDMS, ACRS, DDUS, LIGHTS, MN C CONTR
- 5) FUSE, 35A

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A31F19
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5061 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) CBS FOR SIG COND, MDMS, ACRS, DDUS, LIGHTS, MN C CONTR
- 5) FUSE, 35A
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | 4-1 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A31F20
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5062 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) ML86B PANEL
- 4) CBS FOR GALLEY, WASTE, PYROJETT KU ANT & STBD RMS, EMU, FLOODS

5) FUSE, 35A

6) 7)

8)

9) 05-6

CRITICALITIES

| V-1000000000000000000000000000000000000 | | | |
|---|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A31F21
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76C18H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5063 ABORT: 3/3

ITEM: FUSE, 15A TO A6A1 PANEL (FUSE 8) & A14 PANEL

(RCS/OMS HTRS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 15A TO A6A1 PANEL (FUSE 8) & A14 PANEL (RCS/OMS HTRS)

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31F22 PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT POWER SOURCE TO THE FORWARD RCS HEATERS WHICH WOULD HAVE LITTLE EFFECT ON ASCENT AND NONE ON ENTRY. POSSIBLE LOSS OF MISSION COULD RESULT ON ORBIT DEPENDING ON OPERATIONS REQUIRED.

REFERENCES: 76C21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5064 ABORT: 3/1R

ITEM: FUSE, 5A TO RESISTORS TO MN A CONT BUS PWR, ESS

BUS SOURCE 3AB, ESS BUS SOURCE 2CA

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAL PANEL
- 4) FUSE, 5A TO RESISTORS TO MN A CONT BUS PWR, ESS BUS SOURCE 3AB, ESS BUS SOURCE 2CA
 - 5)
 - 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F25
PART NUMBER: ME451-0009-5050

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE OF POWER TO THREE CONTROL BUSSES AND TWO ESSENTIAL BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76C22H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5065 ABORT: 3/3

ITEM: FUSE, 5A TO RMS PWR (FUSE 1), RMS HTRS (RESISTORS)

& RJDA MANF DRS (FUSES 9 & 12)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) A8A2 PANEL & 014 PANEL
- 4) FUSE, 5A TO RMS PWR (FUSE 1), RMS HTRS (RESISTORS) & RJDA MANF DRS (FUSES 9 & 12)
 - 5)
 - 6)
 - 7)
 - 8)
 - 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F34

PART NUMBER: ME451-0009-5050

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO POWER SOURCES TO THE RMS. SECOND FAILURE WHILE ON ORBIT TO THE RMS POWER COULD LEAVE THE ARM IN A POSITION WHERE IT COULD NOT BE JETTISONED. THIS WOULD PRECLUDE A SAFE ENTRY.

REFERENCES: 76C23H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5066 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS BC1)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A2CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

ONE FAILURE WOULD HAVE NO EFFECT AS THE CONTROL BUS HAS REDUNDANT POWER SUPPLIED THROUGH TWO RPC'S. LOSS OF ALL REDUNDANT POWER TO THE NINE CONTROL BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTION CONTROL.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5067 ABORT: 3/3

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC1)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS BC1)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A2CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF REVERSE CURRENT PROTECTION BETWEEN ONE TRIAD OF CONTROL BUSSES. CONTROL BUS CIRCUIT IS FURTHER PROTECTED BY 10 A CIRCUIT BREAKER. THE NET RESULT IS NO EFFECT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5068 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS BC2)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A2CR5
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

ONE FAILURE WOULD HAVE NO EFFECT AS THE CONTROL BUS HAS REDUNDANT POWER SUPPLIED THROUGH TWO RPC'S. LOSS OF ALL REDUNDANT POWER TO THE NINE CONTROL BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTION CONTROL.

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DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5069 FLIGHT: 3/3

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC2)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS BC2)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A2CR5
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF REVERSE CURRENT PROTECTION BETWEEN ONE TRIAD OF CONTROL BUSSES. CONTROL BUS CIRCUIT IS FURTHER PROTECTED BY 10 A CIRCUIT BREAKER. THE NET RESULT IS NO EFFECT.

REFERENCES: 76C4D

C-2

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5070 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS BC3)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A2CR6
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

ONE FAILURE WOULD HAVE NO EFFECT AS THE CONTROL BUS HAS REDUNDANT POWER SUPPLIED THROUGH TWO RPC'S. LOSS OF ALL REDUNDANT POWER TO THE NINE CONTROL BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTION CONTROL.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5071 ABORT: 3/3

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC3)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS BC3)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A2CR6
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF REVERSE CURRENT PROTECTION BETWEEN ONE TRIAD OF CONTROL BUSSES. CONTROL BUS CIRCUIT IS FURTHER PROTECTED BY 10 A CIRCUIT BREAKER. THE NET RESULT IS NO EFFECT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5072 ABORT: 3/3

ITEM: SWITCH, TOGGLE (DC UTIL PWR MN A)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) M052J PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN A)

6) 7)

8)

9) 05-6

CRITICALITIES

| V1/4 4 4 V1/4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | | | |
|---|--------------------------------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 3/3 | |
| 3/3 | TAL: | 3/3 | |
| 3/3 | AOA: | 3/3 | |
| 3/3 | ATO: | 3/3 | |
| : 3/3 | | • | |
| | HDW/FUNC 3/3 3/3 3/3 3/3 | HDW/FUNC ABORT 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 80V73A124S1
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE,

MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76C1F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5073 ABORT: 3/3

ITEM: SWITCH, TOGGLE (DC UTIL PWR MN A)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) M052J PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN A)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| ~ | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 80V73A124S1

PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE,

MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO

EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76C1F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 3/3 MDAC ID: 5074 SWITCH, TOGGLE (DC UTIL PWR MN A) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) 014 PANEL 019 PANEL 4) 5) SWITCH, TOGGLE (DC UTIL PWR MN A) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A19S2

PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5075 ABORT: 3/3

ITEM: SWITCH, TOGGLE (DC UTIL PWR MN A)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) 019 PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN A)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A19S2

PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE,

MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO

EFFECT ON CREW/MISSION/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5076 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 5A (MN C CONTR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) CIRCUIT BREAKER, 5A (MN C CONTR)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| VI.L | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 33V73A14CB38
PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF BACKUP POWER FOR THE CONTROL OF FUEL CELL POWER TO THE MAIN DC BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76Y20G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5077 ABORT: 3/3

ITEM: CIRCUIT BREAKER, 5A (MN C CONTR)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) CIRCUIT BREAKER, 5A (MN C CONTR)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | O1/2 1 1 C1 | | |
|-----------------|-------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A14CB38
PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE OR MISSION.

REFERENCES: 76Y20G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC FLIGHT: SUBSYSTEM: EPD&C 3/3 MDAC ID: 5078 ABORT: 3/3 CIRCUIT BREAKER, 10A (MN A UTIL PWR 019/M052J) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) 014 PANEL 4) CIRCUIT BREAKER, 10A (MN A UTIL PWR 019/M052J) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 33V73A14CB10

PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FAILURE WOULD CAUSE LOSS OF POWER AT DC UTILITY OUTLETS, WHICH ARE NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76C24A

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5079 ABORT: 3/3

ITEM: CIRCUIT BREAKER, 10A (MN A UTIL PWR 019/M052J)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) 014 PANEL
- 4) CIRCUIT BREAKER, 10A (MN A UTIL PWR 019/M052J)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A14CB10
PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FAILURE WOULD CAUSE LOSS OF OVERLOAD PROTECTION AT DC UTILITY OUTLETS, WHICH ARE NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76C24A

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R
MDAC ID: 5080 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 10A (CONT BUS BC1, BC2, BC3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) CIRCUIT BREAKER, 10A (CONT BUS BC1, BC2, BC3)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|---|--|--|
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 3/1 <u>R</u> | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| : 3/3 | * | • | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | HDW/FUNC ABORT 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A15CB62 PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

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EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO THREE CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76C19G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5081 ABORT: 3/3

ITEM: CIRCUIT BREAKER, 10A (CONT BUS BC1, BC2, BC3)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) R15 PANEL
- 4) CIRCUIT BREAKER, 10A (CONT BUS BC1, BC2, BC3)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A15CB62
PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76C19G

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 2/1R ABORT: 2/1R SUBSYSTEM: EPD&C

MDAC ID: 5082

RESISTOR, 1.2K 2W (TO MPCA-1) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS AB3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO MPCA-1)

4) 5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | | |
|-----------------|----------|-------|----------|--|--|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R | | |
| LIFTOFF: | 3/2R | TAL: | 2/1R | | |
| ONORBIT: | 2/1R | AOA: | 2/1R | | |
| DEORBIT: | 2/1R | ATO: | 2/1R | | |
| LANDING/SAFING: | 3/3 | | • | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A1R2 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76F24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5083 3/3 ABORT:

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 1)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) CONT BUS CA2
- 3) MA73C PANEL
- SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 1) 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|--------------------------|---|--|
| 3/3 | RTLS: | 3/3 | |
| 3/3 | TAL: | 3/3 | |
| 3/3 | AOA: | 3/3 | |
| 3/3 | ATO: | 3/3 | |
| 3/3 | | • | |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 85V73A129S2 PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76F24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5084 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) CONT BUS CA2
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 1)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S2
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76F24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5085 ABORT: 3/1R

ITEM: FUSE, 150A TO FPCA-1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 150A TO FPCA-1
- 4)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F11
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76E24G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5086 ABORT: 3/1R

ITEM: FUSE, 150A TO FPCA-1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 150A TO FPCA-1
- 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F12
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76E24G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5087 ABORT: 3/1R

ITEM: FUSE, 150A TO FPCA-1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 150A TO FPCA-1
- 4)
- 5)
- 7)
- 8) 9) 05-6

CRITICALITIES

| VI | ~ | | |
|----------|-----------------------------|--|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 3/1R | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| : 3/3 | | • | |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F13
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76E24G

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5088 | | HIGHEST CF | RITICALITY FLIGHT: ABORT: | HDW/FUNC 3/3 3/3 |
|--|--------------------------------------|-------------|---------------------------------|------------------------|
| ITEM: RESISTOR FAILURE MODE: FAILS OF | R, 5.1K 1/4W PEN | (TO GSE MON | NITOR) | |
| LEAD ANALYST: K. SCHMEO | CKPEPER | SUBSYS LEA | D: K. SCHM | ECKPEPER |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY 3) RESISTOR, 5.1K 1/4 4) 5) 6) 7) 8) | | NITOR) | | |
| 9) 05-6 | | | | |
| | CRITICAL | ITIES | | |
| FLIGHT PHASE H PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING: | IDW/FUNC 3/3 3/3 3/3 3/3 | ABORT | 3/3 3/3 3/3 | |
| REDUNDANCY SCREENS: A | .[] | B [] | c [] | |
| LOCATION: 40V76A31R PART NUMBER: RLR07C512 | | | | |
| CAUSES: CONTAMINATION, | THERMAL STR | ESS, VIBRAT | ION, MECH | SHOCK |
| EFFECTS/RATIONALE: THIS MEASUREMENT IS NON | N-CRITICAL FO | R FLIGHT OF | PERATIONS. | |

REFERENCES: 76E23E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5089 ABORT: 3/3

ITEM: RPC, 5A (FMCA-1 PWR CONT)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) RPC, 5A (FMCA-1 PWR CONT)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| | C1/T T T C1 | MITITUD | |
|-----------------|-------------|---------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A22RPC12 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76E21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5090 ABORT: 2/1R

ITEM: RPC, 5A (FMCA-1 PWR CONT)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) RPC, 5A (FMCA-1 PWR CONT)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|--------------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | : 3/3 | 4-1-1 | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22RPC12 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO LOADS ON THE MCA. SECOND FAILURE TO THESE LOADS MAY RESULT IN LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE FORWARD DOORS PRIOR TO ENTRY.

REFERENCES: 76E21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5091 ABORT: 3/1R

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) FUSE, 150A TO MAIN DC DIST ASSY 1
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22F6

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76E21G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5092 ABORT: 3/1R

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) FUSE, 150A TO MAIN DC DIST ASSY 1
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22F7

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76E21G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5093 ABORT: 3/1R

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) FUSE, 150A TO MAIN DC DIST ASSY 1
- 5)
- 6) 7)
- 7)

===

9) 05-6

CRITICALITIES

| V-12 - 2 - V-102 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • " |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22F8

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76E21G

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 5094 MDAC ID: RESISTOR, 5.1K TO TEST POINTS ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) FPCA-1 4) RESISTOR, 5.1K TO TEST POINTS 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A22A1R75 PART NUMBER: RLR07C512GR (?) CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED TO CHECK MAIN DC BUS A. THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS ALTERNATE MEANS ARE AVAILABLE TO THE CREW.

REFERENCES: 76E10G

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 SUBSYSTEM: EPD&C 3/3 FLIGHT: MDAC ID: 5095 3/3 ABORT: ITEM: RESISTOR, 1.8K 1/4W (TO SIG COND OF1) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) RESISTOR, 1.8K TO SIG COND OF1 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: B [] C [] A [] LOCATION: 81V76A22A1R77 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS MEASUREMENT IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76E8C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5096 ABORT: 1/1

ITEM: FUSE, 35A TO FLCA-1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) FUSE, 35A TO FLCA-1
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | ~1.~ | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 1/1 |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22F5

PART NUMBER: ME451-0009-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT POWER SOURCE TO LOADS CONNECTED TO THE PCA. LOSS OF ALL POWER TO THESE LOADS COULD CAUSE LOSS OF CREW/MISSION.

DURING AN RTLS, THIS FAILURE WILL CAUSE LOSS OF FORWARD RCS MANIFOLD ISOL VALVE 1 WHICH WILL RESULT IN A CG PROBLEM DUE TO REDUCED DUMP CAPABILITY. THIS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76E10D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5097 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO FPCA-1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS CA2
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO FPCA-1)
- 4)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A1R1
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76E24H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

FLIGHT: 2/1R SUBSYSTEM: EPD&C 2/1R MDAC ID: 5098 ABORT:

SWITCH, TOGGLE SPST (MCA LOGIC MN A FWD 1) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) CONT BUS AB3
- 3) MA73C PANEL

4) SWITCH, TOGGLE SPST (MCA LOGIC MN A FWD 1)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S1 PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76E24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5099 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN A FWD 1)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) CONT BUS AB3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN A FWD 1)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 85V73A129S1
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT

CONFIGURATION.

REFERENCES: 76E24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5100 ABORT: 3/1R

ITEM: FUSE, 150A TO MPCA-1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 150A TO MPCA-1
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|---------------------------------------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | , , , , , , , , , , , , , , , , , , , |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31F17

PART NUMBER: ME451-0016-2150 (?-2100)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE SOURCES OF ESSENTIAL BUS POWER ON TWO ESSENTIAL BUSSES. LOSS OF ALL POWER TO ESSENTIAL BUSSES COULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76F24G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5101 ABORT: 3/3 ITEM: RESISTOR, 5.1K 1/4W (TO GSE MONITOR) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 4) 5) 6) 7) 8) 9) 05-6

CRITICALITIES

| | CKITICADTITES | | |
|-----------------|---------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31R5 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76F24F

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5102 ITEM: RPC, 5A (TO MMCA-1) FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 4) RPC, 5A (TO MMCA-1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 ... ONORBIT: 3/3 AOA: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25RPC11 PART NUMBER: MC450-0017-1050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

EFFECTS/RATIONALE:

SHOCK, THERMAL STRESS, VIBRATION

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76F21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5103 ABORT: 2/1R

ITEM: RPC, 5A (TO MMCA-1)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 5A (TO MMCA-1)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A25RPC11 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76F21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5104 ABORT: 3/1R

ITEM: FUSE, 35A TO H2/O2 HTR CONT ASSY #1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 35A TO H2/O2 HTR CONT ASSY #1

4) 5)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A31F23

PART NUMBER: ME451-0016-2035 (?3035)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/02 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76F7E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5105 ABORT: 3/1R

ITEM: FUSE, 50A TO H2/O2 HTR CONT ASSY #3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 50A TO H2/O2 HTR CONT ASSY #3
- 4) 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A31F24

PART NUMBER: ME451-0016-2050 (?3050)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/O2 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76F7C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5106 ABORT: 3/1R

ITEM: FUSE, 150A TO APCA-1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- 4) FUSE, 150A TO APCA-1
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 54V76Al34F3

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO LOADS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76G24H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

SUBSYSTEM: EPD&C FLIGHT: 1/1 MDAC ID: ABORT: 1/1 5107

ITEM: FUSE, 100A TO ALCA-1 FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS A 1)
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- 4) FUSE, 100A TO ALCA-1
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 1/1 |
| LIFTOFF: | 3/1R | TAL: | 1/1 |
| ONORBIT: | 3/1R | AOA: | 1/1 |
| DEORBIT: | 1/1 | ATO: | 1/1 |
| LANDING/SAFING: | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C[F]

LOCATION: 54V76A134F6

PART NUMBER: ME451-0016-0100(?-2100)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ALL POWER (MAIN DC BUS A) TO BOTH HELIUM BLOWDOWN VALVES THAT ARE USED TO VENT THE AFT FUSELAGE WHICH MAY CONTAIN AN EXPLOSIVE MIXTURE OF GASSES.

REFERENCES: 76G9H

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: SUBSYSTEM: EPD&C 3/3 MDAC ID: 5108 ABORT: 3/3 ITEM: RESISTOR, 1.8K 1/4W (TO SIG COND OA1) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 APCA-4 3) 4) RESISTOR, 1.8K 1/4W (TO SIG COND OA1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 3/3 TAL: ONORBIT: AOA: 3/3 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134A3R25 PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76G9H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5109 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO APCA-4)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS AB3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO APCA-4)
- 4) 5)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A1R4
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76H24H

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 2/1R

MDAC ID:

5110

ABORT:

2/1R

ITEM:

SWITCH, TOGGLE SPST (MCA LOGIC MN A AFT 1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- CONT BUS AB3 2)
- 3) MA73C PANEL
- SWITCH, TOGGLE SPST (MCA LOGIC MN A AFT 1)

5)

6)

7)

8) 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S4 PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT DC POWER TO MCA. SECOND FAILURE COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS AND CONTROL RCS VALVES.

REFERENCES: 76H23H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5111 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN A AFT 1)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) CONT BUS AB3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN A AFT 1)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 85V73A129S4
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE BECAUSE THIS SWITCH IS NORMALLY ON.

REFERENCES: 76H23H

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 2/1R

MDAC ID: 5112

ABORT:

2/1R

ITEM:

RPC, 5A (TO AMCA-1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4

5)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 54V76A134RPC24

PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE CAUSES LOSS OF ONE MCA BUS. CRITICAL LOADS ARE REDUNDANTLY POWERED. SECOND FAILURE TO ONE OF THESE LOADS MAY CAUSE LOSS OF CREW/VEHICLE, IF DOOR CLOSURE COULD NOT BE PERFORMED PRIOR TO ENTRY.

REFERENCES: 76H17H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5113 ABORT: 3/3

ITEM: RPC, 5A (TO AMCA-1)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- 4) RPC, 5A (TO AMCA-1)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A134RPC24 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76H17H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5114 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO MPCA-1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS AB3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO MPCA-1)
- 4) 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A1R3
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76J16H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5115 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) CONT BUS AB3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 3)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------------------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 2/1R | |
| 3/3 | TAL: | 2/1R | |
| 2/1R | AOA: | 2/1R | |
| 2/1R | ATO: | 2/1R | |
| 3/3 | | • | |
| | 3/3 3/3 2/1R 2/1R | 3/3 RTLS: 3/3 TAL: 2/1R AOA: 2/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S3
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76J16H

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5116 SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 3) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) CONT BUS AB3 3) MA73C PANEL 4) SWITCH, TOGGLE SPST (MCA LOGIC MN A MID 3) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 85V73A129S3
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76J16H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5117 ABORT: 3/3

ITEM: RPC, 5A (TO MMCA-3)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 5A (TO MMCA-3)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC12 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76J16E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5118 ABORT: 2/1R

ITEM: RPC, 5A (TO MMCA-3)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 5A (TO MMCA-3)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A25RPC12 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76J16E

DATE: HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: SUBSYSTEM: EPD&C 3/3 MDAC ID: 5119 ABORT: 3/3 ITEM: RPC, 7.5A (GSE MAIN B OFF) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) APCA - 5 4) RPC, 7.5A (GSE MAIN B OFF) 5) 6) 7) 8)

| | | | | _ | | _ | |
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|-----------------|---------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135RPC1 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

9)

05-6

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L24F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5120 ABORT: 3/3

ITEM: RPC, 7.5A (GSE MAIN B OFF)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) APCA 5
- 4) RPC, 7.5A (GSE MAIN B OFF)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135RPC1
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L24F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5121 ABORT: 3/3

ITEM: RPC, 7.5A (GSE MAIN B ON)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) APCA 5
- 4) RPC, 7.5A (GSE MAIN B ON)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135RPC2 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L23F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5122 ABORT: 3/3

ITEM: RPC, 7.5A (GSE MAIN B ON)
FAILURE MODE: FAILS CLOSED

FAILURE MODE. FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) APCA 5
- 4) RPC, 7.5A (GSE MAIN B ON)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135RPC2 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L23F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5123 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (GSE PWR CONTROL)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) APCA 5
- 4) SWITCH, MOTORIZED (GSE PWR CONTROL)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135S1
PART NUMBER: MC455-0126-0001

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, THERMAL STRESS, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L23E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5124 SWITCH, MOTORIZED (GSE PWR CONTROL) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #2 2) 3) APCA - 5 SWITCH, MOTORIZED (GSE PWR CONTROL) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 RTLS: 3/3 3/3 LIFTOFF: TAL: 3/3 3/3 ONORBIT: AOA: 3/3

REDUNDANCY SCREENS: A [] B [] C []

3/3

LOCATION: 55V76A135S1
PART NUMBER: MC455-0126-0001

LANDING/SAFING: 3/3

DEORBIT:

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, THERMAL STRESS, MECH SHOCK

ATO:

3/3

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L23E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5125 ABORT: 2/1R

ITEM: FUSE, 200A TO MAIN DC DIST ASSY 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) APCA-5
- 3) FUSE, 200A TO MAIN DC DIST ASSY 2
- 4) 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 55V76A135F1

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF ALL REDUNDANCY WOULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO OPEN THE LH2 FILL AND DRAIN VALVE TO DUMP LH2 PRIOR TO DEORBIT. THIS WOULD ALLOW GH2 VENTING DURING ENTRY WHICH COULD CREATE AN EXPLOSIVE MIXTURE WITH ATMOSPHERIC O2.

REFERENCES: 76L22C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5126 ABORT: 2/1R

ITEM: FUSE, 200A TO MAIN DC DIST ASSY 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) APCA-5
- 3) FUSE, 200A TO MAIN DC DIST ASSY 2

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 55V76A135F2

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF ALL REDUNDANCY WOULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO OPEN THE LH2 FILL AND DRAIN VALVE TO DUMP LH2 PRIOR TO DEORBIT. THIS WOULD ALLOW GH2 VENTING DURING ENTRY WHICH COULD CREATE AN EXPLOSIVE MIXTURE WITH ATMOSPHERIC O2.

REFERENCES: 76L22C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5127

ITEM: FUSE, 3A TO GSE MONITOR

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- PRE-FLT TEST BUS #2 2)
- APCA 5 3)
- FUSE, 3A TO GSE MONITOR 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| CMITTOMETITES | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76Al35Fl7 PART NUMBER: MC451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT OPERATIONS.

REFERENCES: 76L22F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5128 ITEM: RESISTOR, 1.2K (TO GSE PWR CONT) FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 2) PRE-FLT TEST BUS #2 3) APCA-5 4) RESISTOR, 1.2K (TO GSE PWR CONT) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 B[] C[] REDUNDANCY SCREENS: A [] LOCATION: 55V76A135A1R55 PART NUMBER: RLR42C122GM CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATION.

REFERENCES: 76L22D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5129 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B 2) MAIN DC DIST ASSY #2 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 PRELAUNCH: 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32R2 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76L76L20D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5130 MDAC ID: RESISTOR, 5.1K 1/4W (TO GSE MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 3) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT RTLS: 3/3 3/3 PRELAUNCH: LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A32R3 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS. REFERENCES: 76L19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5131 ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W

ITEM: RESISTOR, 1.2K 2
FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

1) MAIN DC BUS B

2) MAIN DC DIST ASSY #2

3) ESS BUS 2CA

4) RESISTOR, 1.2K 2W

5)

6)

7)

8)

9) 05-6

CRITICALITIES

| CRITCHITIES | | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32R9
PART NUMBER: RLR42C122GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPLIES NON-CRITICAL MEASUREMENT CIRCUITS.

REFERENCES: 76L16B

| | SYSTEM: C ID: | | 1/87 | | | 1 | HIGHI | 1 | TICAL FLIGHT ABORT: | 1: | HDW/FUNC 3/3 3/3 |
|--------------|--|-----------------|-------------|--------------|-------|--------|-------|---------|---------------------------|------|------------------------|
| ITEM FAII | i: Lure mod | RE E: FA | SISTOR | R, 5. PEN | 1K 1/ | /4W (5 | O MI | M OF3) | 1 | | |
| LEAD | ANALYS | T: K. | SCHMEC | KPEP | ER | | SUBSY | S LEAD |): K. | SCHM | ECKPEPER |
| 1) | AKDOWN H MAIN D MAIN D RESIST | C BUS | В | #2 W (T | MDM C | ı of3 |) | | | | |
| 9) | 05-6 | | | | | | | | | | |
| | | | | | CRITI | CALI | CIES | | | | |
| | FLIGHT PRELL | PHASE | Н | DW/F | UNC | | ABO | RT | HDW | /FUN | C |
| | PREL | AUNCH: | | 3/3 | | | | RTLS: | 3 | /3 | |
| | LIFT | OFF: | | 3/3 | | | | TAL: | 3 | /3 | |
| | ONOR | BIT: | | 3/3 | | | | AOA: | 3 | /3 | |
| | | BIT: | | 3/3 | | | | ATO: | 3 | /3 | |
| | | ING/SA | FING: | 3/3 | | | | | | • | |
| REDU | NDANCY | SCREEN | S: A | [|] | В | ι |] | c [|] | - · |
| | TION: NUMBER | | | | | | - | | | | |
| CAUS | ES: CO | NTAMIN | ATION, | THE | RMAL | STRES | ss, v | IBRATI | ON, M | ECH | SHOCK |
| EFFE THIS | CTS/RAT | IONALE EMENT | : IS NON | I-CRI | TICAI | L FOR | FLI | GHT OPI | ERATIO | ns. | |
| REFE | RENCES: | 76L1 | 6C · | | | | | | | | |

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5133 RESISTOR, 5.1K 1/4W (TO MDM OF3) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B MAIN DC DIST ASSY #2 2) 3) RESISTOR, 5.1K 1/4W (TO MDM OF3) 4) 5) 6) 7)

CRITICALITIES

| CKITICKHITIHO | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32R10 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

8) 9)

05-6

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76L13C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5134 RESISTOR, 2K 1/4W (TO C&W) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) RESISTOR, 2K 1/4W (TO C&W) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT PRELAUNCH: RTLS: 3/3 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A32R7 PART NUMBER: RBR54L20000AR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL TO FLIGHT OPERATIONS. REFERENCES: 76L9B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: SUBSYSTEM: EPD&C 3/3 MDAC ID: 5135 ABORT: 3/3 ITEM: RESISTOR, 14K 1/4W (TO C&W) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 RESISTOR, 14K 1/4W (TO C&W) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: 3/3 LIFTOFF: ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C [

LOCATION: 40V76A32R6
PART NUMBER: RBR54L14001AR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L8B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5136 ABORT: 2/1R

ITEM: SHUNT, DC AMMETER (TO F/C 2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) SHUNT, DC AMMETER (TO F/C 2)
- 4) 5)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | : 2/1R | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32R11
PART NUMBER: MSB-501

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF POWER FROM FUEL CELL #2. LOSS OF ALL REDUNDANCY WOULD RESULT IN LOSS OF CREW/VEHICLE DUE TO LOSS OF ALL POWER.

A SECOND FAILURE IN THE BUS TIE CIRCUIT WOULD CAUSE LOSS OF POWER TO MPS AND FORWARD RCS VALVES WHICH COULD CAUSE LOSS OF CREW/VEHICLE DUE TO EXPLOSIVE GAS IN THE AFT COMPARTMENT OR LACK OF CG CONTROL DURING ENTRY.

REFERENCES: 76L3B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5137 ABORT: 3/3

ITEM: FUSE, 3A TO DC VOLTMETER

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 3A TO DC VOLTMETER

4)

5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32F36
PART NUMBER: ME451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW.

REFERENCES: 76L10B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5138 FUSE, 3A TO DC VOLTMETER ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 2) 3) FUSE, 3A TO DC VOLTMETER 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 3/3 ATO: DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] LOCATION: 40V76A32F35 PART NUMBER: ME451-0009-1003 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW.

REFERENCES: 76L12C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5139 ABORT: 3/1R

ITEM: FUSE, 20A TO ESS BUS 2CA

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 20A TO ESS BUS 2CA

4)

5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | · | |
| | | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F34
PART NUMBER: ME451-0009-5200

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO THE ESS BUS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF ALL POWER TO ORBITER ESSENTIAL LOADS RESULTING IN LOSS OF CREW/VEHICLE.

REFERENCES: 76L12C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5140 ABORT: 3/1R

ITEM: FUSE, 200A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 200A TO DC TIE BUS
- 4) 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F30
PART NUMBER: ME451-0016-2200

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76L17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5141 ABORT: 3/1R

ITEM: FUSE, 200A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 200A TO DC TIE BUS
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| 01/1140111111 | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F31
PART NUMBER: ME451-0016-2200

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76L17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5142 ABORT: 3/1R

ITEM: FUSE, 150A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 150A TO DC TIE BUS

4) 5)

6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F27

PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76L16C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5143 ABORT: 3/1R

ITEM: FUSE, 150A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 150A TO DC TIE BUS
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F28
PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76L16C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/1R FLIGHT: SUBSYSTEM: EPD&C 3/1R ABORT: MDAC ID: 5144

FUSE, 150A TO DC TIE BUS ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- MAIN DC DIST ASSY #2 2)
- FUSE, 150A TO DC TIE BUS
- 4) 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| | ~~·~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | |
|-----------------|--|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F29 PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76L16C

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 ABORT: MDAC ID: 5145 FUSE, 5A TO MPCA-2, FPCA-2, APCA-5 FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 2) 3) CURRENT SENSOR EXCITATION #2,5,8 FUSE, 5A TO MPCA-2, FPCA-2, APCA-5 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES

| | 41/414 4114 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | |
|-----------------|---|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | ŕ |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32F14 PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS IS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76L19B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 2/1R SUBSYSTEM: EPD&C 2/1R ABORT: MDAC ID: 5146

FUSE, 200A TO APCA-5 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 200A TO APCA-5
- 4) 5)
- 6)
- 7)
- 8)
- 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION:

40V76A32F15

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF ALL REDUNDANCY WOULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO OPEN THE LH2 FILL AND DRAIN VALVE TO DUMP LH2 PRIOR TO DEORBIT. THIS WOULD ALLOW GH2 VENTING DURING ENTRY WHICH COULD CREATE AN EXPLOSIVE MIXTURE WITH ATMOSPHERIC 02.

REFERENCES: 76L19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5147 ABORT: 2/1R

ITEM: FUSE, 200A TO APCA-5

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 200A TO APCA-5

4)

5)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|----------------------|--|--|
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 2/1R | |
| 2/1R | AOA: | 2/1R | |
| 2/1R | ATO: | 2/1R | |
| 3/3 | | · | |
| | 3/1R 2/1R 2/1R | 3/3 RTLS: 3/1R TAL: 2/1R AOA: 2/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 40V76A32F16

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. LOSS OF ALL REDUNDANCY WOULD CAUSE POSSIBLE LOSS OF CREW/VEHICLE DUE TO INABILITY TO OPEN THE LH2 FILL AND DRAIN VALVE TO DUMP LH2 PRIOR TO DEORBIT. THIS WOULD ALLOW GH2 VENTING DURING ENTRY WHICH COULD CREATE AN EXPLOSIVE MIXTURE WITH ATMOSPHERIC O2.

REFERENCES: 76L19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5148 ABORT: 2/1R

ITEM: SWITCH, MOTORIZED (DC TIE BUS MAIN B)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) SWITCH, MOTORIZED (DC TIE BUS MAIN B)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 2/1R | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32S1

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF CAPABILITY TO POWER ONE MAIN DC BUS FROM ANOTHER MAIN DC BUS. LOSS OF ALL CAPABILITY TO BUS TIE THE MAIN DC BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE AS CRITICAL LOADS COULD NOT BE POWERED (I.E. MPS VALVES).

REFERENCES: 76L17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5149 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (DC TIE BUS MAIN B)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) SWITCH, MOTORIZED (DC TIE BUS MAIN B)
- 4)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| V1.2.2.4.2.2.2.2 | | | |
|------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION:

40V76A32S1

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

NO EFFCT ON CREW/VEHICLE/MISSION AS TWO TIE BUS CONTACTORS MUST CLOSED BEFORE TWO BUSSES ARE TIED TOGETHER. THE LOSS OF ISOLATION CAPABILITY BETWEEN TWO BUSSES WOULD HAVE NO EFFECT AS THE TIE BUSSES ARE FUSE ISOLATED.

REFERENCES: 76L17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5150 ABORT: 3/1R

ITEM: SWITCH, MOTORIZED (MAIN DC BUS B F/C PWR)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) SWITCH, MOTORIZED (MAIN DC BUS B F/C PWR)
- 4) 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32S2

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD HAVE NO EFFECT AS THIS IS NORMAL OPERATION. LOSS OF ALL ABILITY TO DISCONNECT FUEL CELLS FROM CRITICAL LOADS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76L14C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

2/1R SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5151 ABORT:

SWITCH, MOTORIZED (MAIN DC BUS B F/C PWR) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) SWITCH, MOTORIZED (MAIN DC BUS B F/C PWR)

4)

5)

6)

. 7) 8)

9) 05-6

CRITICALITIES

| | CHITTOMETITE | | |
|-----------------|--------------|-------|---------------------------------------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 2/1R | | · · · · · · · · · · · · · · · · · · · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32S2

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF 1/3 OF VEHICLE POWER AND LOSS OF POWER TO CERTAIN CRITICAL MPS VALVES. BUS TIE CAPABILITY EXITS TO POWER THE BUS. A FAILURE OF THE BUS TIE POWER SWITCH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LACK OF POWER TO CRITICAL MPS VALVES. LOSS OF ALL POWER (REDUNDANCY) WOULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76L14C

DATE: 3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

2/1R

MDAC ID:

5152

ABORT:

2/1R

ITEM:

SWITCH, MOTORIZED (MAIN DC BUS C F/C PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- MAIN DC DIST ASSY #3
- 3) SWITCH, MOTORIZED (MAIN DC BUS C F/C PWR)

4)

5)

6) 7)

8)

05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 3/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

40V76A33S2

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF 1/3 OF VEHICLE POWER AND LOSS OF POWER TO CERTAIN CRITICAL MPS VALVES. BUS TIE CAPABILITY EXITS TO POWER THE BUS. A FAILURE OF THE BUS TIE POWER SWITCH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LACK OF POWER TO CRITICAL . MPS VALVES. LOSS OF ALL POWER (REDUNDANCY) WOULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76Y14C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5153 ABORT: 3/1R

ITEM: SWITCH, MOTORIZED (MAIN DC BUS C F/C PWR)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) SWITCH, MOTORIZED (MAIN DC BUS C F/C PWR)
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| 41/217412120 | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33S2

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD HAVE NO EFFECT AS THIS IS NORMAL OPERATION. LOSS OF ALL ABILITY TO DISCONNECT FUEL CELLS FROM CRITICAL LOADS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76Y14C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5154 SWITCH, MOTORIZED (DC TIE BUS MAIN C) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 SWITCH, MOTORIZED (DC TIE BUS MAIN C) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: TAL: 3/3 ONORBIT: AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 B[] C[] cupping REDUNDANCY SCREENS: A [] LOCATION: 40V76A33S1 PART NUMBER: MC455-0126-0001 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, VIBRATION EFFECTS/RATIONALE: NO EFFCT ON CREW/VEHICLE/MISSION AS TWO TIE BUS CONTACTORS MUST CLOSED BEFORE TWO BUSSES ARE TIED TOGETHER. THE LOSS OF ISOLATION CAPABILITY BETWEEN TWO BUSSES WOULD HAVE NO EFFECT AS THE TIE BUSSES ARE FUSE ISOLATED. REFERENCES: 76Y17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5155 ABORT: 2/1R

ITEM: SWITCH, MOTORIZED (DC TIE BUS MAIN C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) SWITCH, MOTORIZED (DC TIE BUS MAIN C)

4)

5) 6)

7)

/) 8)

9) 05-6

CRITICALITIES

| | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | |
|-----------------|--|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 3/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33S1

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF CAPABILITY TO POWER ONE MAIN DC BUS FROM ANOTHER MAIN DC BUS. LOSS OF ALL CAPABILITY TO BUS TIE THE MAIN DC BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE AS CRITICAL LOADS COULD NOT BE POWERED (I.E. MPS VALVES).

REFERENCES: 76Y17C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5156 FLIGHT: 3/3

ITEM: RPC, 7.5A (DC TIE BUS MAIN B)
FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
 2) PRE-FLT TEST BUS #2
 3) MPCA 2
 4) RPC, 7.5A (DC TIE BUS MAIN B)
 5)
 6)
 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC3
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L17E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5157 ABORT: 3/3

ITEM: RPC, 7.5A (DC TIE BUS MAIN B)

FAILURE MODE: INADVERTENT OPERATION

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) RPC, 7.5A (DC TIE BUS MAIN B)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC3
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L17E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5158 ABORT: 3/3

ITEM: RPC, 7.5A (DC TIE BUS MAIN B) FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) RPC, 7.5A (DC TIE BUS MAIN B)

5) 6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC4
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L18E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5159 ABORT: 3/3

ITEM: RPC, 7.5A (DC TIE BUS MAIN B)

FAILURE MODE: INADVERTENT OPERATION

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) RPC, 7.5A (DC TIE BUS MAIN B)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| 41/4144 | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC4
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L18E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: MDAC ID: 5160 3/3 ITEM: RPC, 7.5A (MAIN DC BUS B F/C PWR) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 2 4) RPC, 7.5A (MAIN DC BUS B F/C PWR) 5) 6) 7) 8) 9) 05-6 CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/3 AOA: 3/3
DEORBIT: 3/3 ATO: 3/3 CRITICALITIES LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26RPC5 PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L14E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5161 ABORT: 3/3

ITEM: RPC, 7.5A (MAIN DC BUS B F/C PWR)

FAILURE MODE: INADVERTENT OPERATION

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- PRE-FLT TEST BUS #2 2)
- 3) MPCA - 2
- RPC, 7.5A (MAIN DC BUS B F/C PWR) 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC5 PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L14E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5162 RPC, 7.5A (MAIN DC BUS B F/C PWR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #2 MPCA - 2 RPC, 7.5A (MAIN DC BUS B F/C PWR) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26RPC6 PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L15E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5163 ABORT: 3/3

ITEM: RPC, 7.5A (MAIN DC BUS B F/C PWR)

FAILURE MODE: INADVERTENT OPERATION

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) RPC, 7.5A (MAIN DC BUS B F/C PWR)
- 5) 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC6
PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76L15E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5164 DIODE, ISOLATION 35A ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 2 4) DC TIE BUS MAIN B
5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A2CR1 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO

REFERENCES: 76L17E

FLIGHT OPERATIONS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5165 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) DC TIE BUS MAIN B
- 5) DIODE, ISOLATION 35A
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | | | · · |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A2CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L17E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5166 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) DC TIE BUS MAIN B
- 5) DIODE, ISOLATION 35A

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A2CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L18E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5167 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) DC TIE BUS MAIN B
- 5) DIODE, ISOLATION 35A
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | * | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A2CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L18E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5168 ITEM: DIODE, ISOLATION 35A FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 2 MAIN DC BUS B F/C PWR 4) 5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: 3/3 3/3 PRELAUNCH: LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A2CR3 PART NUMBER: JANTXIN1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5169 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 2
- 4) MAIN DC BUS B F/C PWR
- 5) DIODE, ISOLATION 35A

6)

7)

8)

9) 05-6

CRITICALITIES

| ~~·~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A2CR3
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76L14E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5170 DIODE, ISOLATION 35A ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 2 MAIN DC BUS B F/C PWR DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A2CR4 PART NUMBER: JANTXIN1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS. REFERENCES: 76L15E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT:

MDAC ID: 5171 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- GSE POWER
- 2) PRE-FLT TEST BUS #2
- MPCA 2 3)
- MAIN DC BUS B F/C PWR 4)
- DIODE, ISOLATION 35A 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|--------------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | | • |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A2CR4 PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO

FLIGHT OPERATIONS.

REFERENCES: 76L15E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5172 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 5A (MN B CONTR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) CIRCUIT BREAKER, 5A (MN B CONTR)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 33V73A16CB30
PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF BACKUP POWER FOR THE CONTROL OF FUEL CELL POWER TO THE MAIN DC BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76L20G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5173 ABORT: 3/3

ITEM: CIRCUIT BREAKER, 5A (MN B CONTR)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) CIRCUIT BREAKER, 5A (MN B CONTR)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | - | |
| | | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A16CB30
PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE OR MISSION.

REFERENCES: 76L20G

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5174

ABORT:

3/1R

ITEM:

CIRCUIT BREAKER, 5A THERMAL (MAIN B CONTR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- 2) 013 PANEL
- ESS BUS 2CA 3)
- CIRCUIT BREAKER, 5A THERMAL (MAIN B CONTR)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 33V73A13CB10

PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO PATHS TO CONTROL THE FUEL CELL TO MAIN DC BUS CONNECTION AND THE DC BUS TO BUS TIE CONNECTION. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF ALL POWER TO ORBITER SYSTEMS.

REFERENCES: 76L20H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 MDAC ID: 5175 ABORT:

ITEM: CIRCUIT BREAKER, 5A THERMAL (MAIN B CONTR)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B 1)
- 2) 013 PANEL
- 3) ESS BUS 2CA
- 4) CIRCUIT BREAKER, 5A THERMAL (MAIN B CONTR)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| | 01/7 7 7 01 | | |
|-----------------|-------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION:

33V73A13CB10 PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF CIRCUIT PROTECTION. IN AN OVERLOAD CONDITION, MULTIPLE ORDER FAILURE, THE OVERLOAD CAN BE CORRECTED BY VARYING THE LOADING OF THE MAIN DC BUSSES THROUGH BUS TIES AND OTHER CIRCUIT BREAKERS.

REFERENCES: 76L20H

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5176

ABORT:

3/1R

ITEM:

DIODE, ISOLATION 12A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) 013 PANEL
- 3) MAIN DC BUS C
- 4) MAIN B CONTR
- 5) DIODE, ISOLATION 12A

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 33V73A13CR3

PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON CREW/VEHICLE UNTIL THIRD FAILURE AND A MAIN DC BUS OR FUEL CELL MUST BE ISOLATED AND MAIN DC BUSSES TIED. POSSIBLE LOSS OF CREW/VEHICLE COULD RESULT IN THIS CASE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5177 ABORT: 3/3

ITEM: DIODE, ISOLATION 12A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) 013 PANEL
- 3) MAIN DC BUS C
- 4) MAIN B CONTR
- 5) DIODE, ISOLATION 12A

6)

7)

8)

9) 05-6

CRITICALITIES

| | 7.12 2 T-1.12 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | | |
|-----------------|---|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A13CR3
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF REDUNDANT ISOLATION CAPABILITY BETWEEN ESS BUS AND MAIN BUS. CIRCUIT BREAKERS COULD BE OPENED IF ISOLATION REQUIRED. NO EFFECT ON CREW/MISSION/VEHICLE.

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

MDAC ID: 5178

FLIGHT: 3/1R

ABORT:

3/1R

ITEM:

DIODE, ISOLATION 12A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) 013 PANEL
- 3) ESS BUS 2CA
- 4) MAIN B CONTR
- 5) DIODE, ISOLATION 12A

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P] Fig. 1

grands and the area of the control o

LOCATION:

33V73A13CR4

PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON CREW/VEHICLE UNTIL THIRD FAILURE AND A MAIN DC BUS OR FUEL CELL MUST BE ISOLATED AND MAIN DC BUSSES TIED. POSSIBLE LOSS OF CREW/VEHICLE COULD RESULT IN THIS CASE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5179 ABORT: 3/3

ITEM: DIODE, ISOLATION 12A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) 013 PANEL
- 3) ESS BUS 2CA
- 4) MAIN B CONTR
- 5) DIODE, ISOLATION 12A

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A13CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF REDUNDANT ISOLATION CAPABILITY BETWEEN ESS BUS AND MAIN BUS. CIRCUIT BREAKERS COULD BE OPENED IF ISOLATION REQUIRED. NO EFFECT ON CREW/MISSION/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5180 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPDT (MAIN BUS TIE B)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #2
- 4) SWITCH, TOGGLE SPDT (MAIN BUS TIE B)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 2/1R | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S14
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

IF A BUS TIE WERE REQUIRED, THIS FAILURE MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL MPS VALVES.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5181 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPDT (MAIN BUS TIE B)

FAILURE MODE: INADVERTENT TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #2
- 4) SWITCH, TOGGLE SPDT (MAIN BUS TIE B)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | |
|-----------------|---|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 2/1R | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73AlA1S14
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

IF A BUS TIE WERE REQUIRED, THIS FAILURE MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL MPS VALVES.

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

FLIGHT:

3/1R

5182

ABORT:

3/1R

ITEM: SWITCH, TOGGLE SPDT (FC/MN BUS B) FAILURE MODE: FAILURE TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- RIAI PANEL
- 3) MAIN DC DIST ASSY #2
- SWITCH, TOGGLE SPDT (FC/MN BUS B)
- 5)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S11

PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF CREW/VEHICLE IF FUEL CELL COULD NOT BE CONNECTED

TO MAIN DC BUS AFTER A FUEL CELL RESTART.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5183 ABORT: 3/1R

ITEM: SWITCH, TOGGLE SPDT (FC/MN BUS B)

FAILURE MODE: INADVERTENTLY TRANSFERS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) RIA1 PANEL
- 3) MAIN DC DIST ASSY #2
- 4) SWITCH, TOGGLE SPDT (FC/MN BUS B)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S11
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF CREW/VEHICLE IF FUEL CELL WAS INADVERTENTLY DISCONNECTED FROM MAIN DC BUS.

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

FLIGHT:

3/2R

5184

ABORT:

3/3

ITEM:

SWITCH, TOGGLE SPDT (PAYLOAD AFT MN B)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) RIAI PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD AFT MN B)

4) 5)

6)

7)

8)

05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | • | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S30

PART NUMBER: ME452-0102-7101

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE AFT PAYLOAD BUS. LOSS OF ALL POWER MAY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO PAYLOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5185 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD AFT MN B)

FAILURE MODE: INADVERTENT TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) RIA1 PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD AFT MN B)

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S30
PART NUMBER: ME452-0102-7101

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE AFT PAYLOAD BUS. LOSS OF ALL POWER MAY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO PAYLOADS.

REFERENCES: 76L12H

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/2R

MDAC ID:

5186

ABORT:

3/3

ITEM:

RELAY (TO AFT PAYLOAD BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER

SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- MAIN DC DIST ASSY #2 2)
- 3) APCA-5
- 4) APCA-2
- RELAY (TO AFT PAYLOAD BUS)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 55V76A132K1

PART NUMBER: MC455-0134-0001

CAUSES: MECH SHOCK, PIECE PART STRUCTURAL FAILURE, VIBRATION,

CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES OF POWER TO THE AFT PAYLOAD. WORST CASE EFFECT IS LOSS OF MISSION DUE TO INABILITY TO SUPPLY POWER TO PAYLOADS.

REFERENCES: 76L8F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5187 ABORT: 3/3

ITEM: RELAY (TO AFT PAYLOAD BUS)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) APCA-2
- 5) RELAY (TO AFT PAYLOAD BUS)

6)

7)

8)

9) 05-6

CRITICALITIES

| V | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A132K1
PART NUMBER: MC455-0134-0001

CAUSES: MECH SHOCK, PIECE PART STRUCTURAL FAILURE, VIBRATION,

CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76L8F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5188 ABORT: 3/2R

ITEM: FUSE, 80A
FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) APCA-2
- 5) FUSE, 80A TO AFT P/L MN B

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 55V76A132F26
PART NUMBER: ME451-0016-0080

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

POSSIBLE LOSS OF MISSION DUE TO LOSS OF POWER TO AFT PAYLOAD AFTER TWO FAILURES.

REFERENCES: 76L9G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5189 ABORT: 3/3 ITEM: RESISTOR, 5.1K FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 2CA 2) APCA-2 3) RESISTOR, 5.1K 4) 5) 6) 7)

CRITICALITIES

| 01/11 1 01/11 1 1 1 1 U | | |
|-------------------------|--------------------------------------|---|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | • | · |
| | HDW/FUNC 3/3 3/3 3/3 3/3 | #DW/FUNC ABORT 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A132A2R6
PART NUMBER: RLR07C5101GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

8) 9)

05-6

THIS FAILURE EFFECTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76L9G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5190 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) 015 PANEL
- 4) CBS FOR MDMS, SIG CONDS, LIGHTS, ARS, GN&C, MN A CONTR
- 5) FUSE, 35A
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F19
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76M24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5191 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) 015 PANEL
- 4) CBS FOR MDMS, SIG CONDS, LIGHTS, ARS, GN&C, MN A CONTR
- 5) FUSE, 35A

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | : | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F20
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76M23H

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 2/1R

MDAC ID: 5192

ABORT:

3/3

ITEM:

FUSE, 10A TO RMS PWR & RJDA

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) A8A2 PANEL & 015 PANEL
- 4) FUSE, 10A TO RMS PWR & RJDA

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION:

40V76A32F37

PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO POWER SOURCES TO THE RMS. SECOND FAILURE WHILE ON ORBIT TO THE RMS POWER COULD LEAVE THE ARM IN A POSITION WHERE IT COULD NOT BE JETTISONED. THIS WOULD PRECLUDE A SAFE ENTRY.

REFERENCES: 76M23H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5193 ABORT: 3/1R

ITEM: FUSE, 5A TO RESISTORS TO CONT BUS PWR MN B, ESS

BUSSES 1BC & 3AB

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) Rlal PANEL
- 4) FUSE, 5A TO RESISTORS TO CONT BUS PWR MN B, ESS BUSSES 1BC & 3AB
- 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F26
PART NUMBER: ME451-0009-5050

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE OF POWER TO THREE CONTROL BUSSES AND TWO ESSENTIAL BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76M21H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/2R SUBSYSTEM: EPD&C MDAC ID: 5194 ABORT: 3/3

FUSE, 15A TO A14 PANEL (RCS/OMS HTRS) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- MAIN DC DIST ASSY #2
 - FUSE, 15A TO A14 PANEL (RCS/OMS HTRS)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

40V76A32F22

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS A REDUNDANT POWER SOURCE TO THE FORWARD RCS HEATERS WHICH WOULD HAVE LITTLE EFFECT ON ASCENT AND NONE ON ENTRY. POSSIBLE LOSS OF MISSION COULD RESULT ON ORBIT DEPENDING ON OPERATIONS REQUIRED.

REFERENCES: 76M21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5195 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) R15 PANEL
- 4) CBS FOR CONT BUS CA1, CA2, CA3, TV, RADIO, LIGHTS
- 5) FUSE, 35A
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F18
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76M19H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5196 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) ML86B PANEL
- 4) CBS FOR LIGHTS, GALLEY, WASTE, PYRO RMS, ARS

5) FUSE, 35A

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F21 PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76M18H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5197 ABORT: 3/3

ITEM: CIRCUIT BREAKER, 10A (MN B UTIL PWR F1/M013Q)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) 015 PANEL
- 4) CIRCUIT BREAKER, 10A (MN B UTIL PWR F1/M013Q)

5) 6)

7)

9) 05-6

CRITICALITIES

| HDW/FUNC |
|----------|
| 3/3 |
| 3/3 |
| 3/3 |
| 3/3 |
| • |
| |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A15CB9
PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FAILURE WOULD CAUSE LOSS OF POWER AT DC UTILITY OUTLETS, WHICH ARE NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76M24A

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5198 CIRCUIT BREAKER, 10A (MN B UTIL PWR F1/M013Q) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) 015 PANEL CIRCUIT BREAKER, 10A (MN B UTIL PWR F1/M013Q) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3

LOCATION: 33V73A15CB9

PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FAILURE WOULD CAUSE LOSS OF OVERLOAD PROTECTION AT DC UTILITY OUTLETS, WHICH ARE NON-CRITICAL TO FLIGHT OPERATIONS.

REDUNDANCY SCREENS: A [] B [] C []

REFERENCES: 76M24A

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5199 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 10A (CONT BUS CA1, CA2, CA3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) R15 PANEL
- 4) CIRCUIT BREAKER, 10A (CONT BUS CA1, CA2, CA3)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| | 7-1 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A15CB63
PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO THREE CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76M19G

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5200 CIRCUIT BREAKER, 10A (CONT BUS CA1, CA2, CA3) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) R15 PANEL 4) CIRCUIT BREAKER, 10A (CONT BUS CA1, CA2, CA3) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 3/3 TAL: LIFTOFF: AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A15CB63 PART NUMBER: MC454-0026-2100 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76M19G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5201 ABORT: 3/3

ITEM: SWITCH, TOGGLE (DC UTIL PWR MN B)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) 015 PANEL
- 4) M013Q PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN B)

6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|--------------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | · |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 80V73A81S11
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76M21B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5202 SWITCH, TOGGLE (DC UTIL PWR MN B) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 3) 015 PANEL M013Q PANEL SWITCH, TOGGLE (DC UTIL PWR MN B) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 80V73A81S11
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76M21B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3
MDAC ID: 5203 ABORT: 3/3

ITEM: SWITCH, TOGGLE (DC UTIL PWR MN B)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) 015 PANEL
- 4) F1 PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN B)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 34V73A1S1

PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE,

MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO

EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76M21A

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 5204 MDAC ID: SWITCH, TOGGLE (DC UTIL PWR MN B) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 3) 015 PANEL Fl PANEL 4) SWITCH, TOGGLE (DC UTIL PWR MN B) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 34V73A1S1 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK EFFECTS/RATIONALE: THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76M21A

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5205 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO FPCA-2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO FPCA-2)
- 4) 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 2/1R |
| 3/2R | TAL: | 2/1R |
| 2/1R | AOA: | 2/1R |
| 2/1R | ATO: | 2/1R |
| 3/3 | | • |
| | 3/3 3/2R 2/1R 2/1R | 3/3 RTLS: 3/2R TAL: 2/1R AOA: 2/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A2R1 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76P24H

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

5206

FLIGHT: 2/1R ABORT:

2/1R

ITEM:

SWITCH, TOGGLE SPST (MCA LOGIC MN B FWD 2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) CONT BUS BC3
- 3) MA73C PANEL
- SWITCH, TOGGLE SPST (MCA LOGIC MN B FWD 2)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1]

B[F] C[P]

LOCATION:

85V73A129S5

PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76P24H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5207 ABORT: 3/3 SWITCH, TOGGLE SPST (MCA LOGIC MN B FWD 2) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B CONT BUS BC3 2) 3) MA73C PANEL SWITCH, TOGGLE SPST (MCA LOGIC MN B FWD 2) 4) 5) 6) 7) 8) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 PRELAUNCH: RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

3/3

3/3

LOCATION: 85V73A129S5
PART NUMBER: ME452-0102-7101

ONORBIT:

DEORBIT:

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

AOA:

ATO:

3/3

3/3

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76P24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5208 ABORT: 3/1R

ITEM: FUSE, 150A TO FPCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 150A TO FPCA-2
- 4) 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F11

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76P24G

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: SUBSYSTEM: EPD&C

5209 3/1R MDAC ID: ABORT:

ITEM: FUSE, 150A TO FPCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- MAIN DC DIST ASSY #2
- 3) FUSE, 150A TO FPCA-2
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | J-1 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F12 PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76P24G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5210 ABORT: 3/1R

ITEM: FUSE, 150A TO FPCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 150A TO FPCA-2
- 4) 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | ~~·~~~~· | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F13

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76P24G

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5211 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B 2) MAIN DC DIST ASSY #2 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32R4
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76P23E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5212 RPC, 5A (FMCA-2 PWR CONT) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 FPCA-2 RPC, 5A (FMCA-2 PWR CONT) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] LOCATION: 82V76A23RPC11 PART NUMBER: MC450-0017-1050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS THE NORMAL FLIGHT CONFIGURATION. REFERENCES: 76P21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5213 ABORT: 2/1R

ITEM: RPC, 5A (FMCA-2 PWR CONT)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) RPC, 5A (FMCA-2 PWR CONT)

5)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23RPC11 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO LOADS ON THE MCA. SECOND FAILURE TO THESE LOADS MAY RESULT IN LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE FORWARD DOORS PRIOR TO ENTRY.

REFERENCES: 76P21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5214 ABORT: 3/1R

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) FUSE, 150A TO MAIN DC DIST ASSY 2

5) 6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82

82V76A23F6

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76P21G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5215 ABORT: 3/1R

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) FUSE, 150A TO MAIN DC DIST ASSY 2
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R1 | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23F5

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76P21G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5216 ABORT: 3/1R

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) FUSE, 150A TO MAIN DC DIST ASSY 2

5)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23F7

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76P21G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5217 ABORT: 1/1

ITEM: FUSE, 35A TO FLCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) FUSE, 35A TO FLCA-2
- 5) 6)
- 7)

E 7

8) 9) 05-6

CRITICALITIES

| | 01/2 2 2 01122 2 2 2 2 | | |
|-----------------|------------------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 1/1 |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBĪT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23F4

PART NUMBER: ME451-0009-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT POWER SOURCE TO LOADS CONNECTED TO THE PCA. LOSS OF ALL POWER TO THESE LOADS COULD CAUSE LOSS OF CREW/MISSION.

DURING AN RTLS, THIS FAILURE WILL CAUSE LOSS OF FORWARD RCS MANIFOLD ISOL VALVE 1 WHICH WILL RESULT IN A CG PROBLEM DUE TO REDUCED DUMP CAPABILITY. THIS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76P8D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5218 RESISTOR, 5.1K ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) FPCA-2 4) RESISTOR, 5.1K TO TEST POINTS 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23A1R16 PART NUMBER: RLR07C512GR (?) CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED TO CHECK MAIN DC BUS B. THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS ALTERNATE MEANS ARE AVAILABLE TO THE CREW.

REFERENCES: 76P8G

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 EPD&C SUBSYSTEM: ABORT: 3/3 5219 MDAC ID: RESISTOR, 1.8K 1/4W (TO SIG COND OF2) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B 1) MAIN DC DIST ASSY #2 2) 3) RESISTOR, 1.8K 1/4W (TO SIG COND OF2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 C [] REDUNDANCY SCREENS: A [] B [] LOCATION: 82V76A23A1R86

PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76P8C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 2/1R SUBSYSTEM: EPD&C ABORT: 2/1R MDAC ID: 5220

RESISTOR, 1.2K 2W (TO MPCA-2) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC3
- MA73C PANEL
- RESISTOR, 1.2K 2W (TO MPCA-2) 3)

4) 5)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A2R2 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76R24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5221 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) CONT BUS BC3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 1)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R | |
| LIFTOFF: | 3/3 | TAL: | 2/1R | |
| ONORBIT: | 2/1R | AOA: | 2/1R | |
| DEORBIT: | 2/1R | ATO: | 2/1R | |
| LANDING/SAFING: | 3/3 | | - | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S6
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76R24H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5222 SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 1) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B CONT BUS BC3 3) MA73C PANEL 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 85V73A129S6 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5223 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO MPCA-2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO MPCA-2)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | 01/2 2 2 01122 2 2 2 2 | | |
|-----------------|------------------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A2R3
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76R24G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 2/1R

SUBSYSTEM: EPD&C MDAC ID:

5224

ABORT:

2/1R

ITEM:

SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- CONT BUS BC3 2)
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 2)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S7

PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76R24F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5225 SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 2) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B CONT BUS BC3 2) 3) MA73C PANEL SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 85V73A129S7 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT

REFERENCES: 76R24F

CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5226 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO MPCA-2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO MPCA-2)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | : 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A3R3
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76R24E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5227 SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 3) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B CONT BUS BC3 2) 3) MA73C PANEL SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 3) 4) 5) 6) 7) 8) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT:

REDUNDANCY SCREENS: A [] B [] C []

3/3

LOCATION: 85V73A129S8 PART NUMBER: ME452-0102-7101

LANDING/SAFING: 3/3

DEORBIT:

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

ATO:

3/3

MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76R24E

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 2/1R

MDAC ID:

5228

ABORT:

2/1R

ITEM:

SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- CONT BUS BC3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 3)

5) 6)

7)

8)

05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | , | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

85V73A129S8

PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

LOCATION:

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76R24E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5229 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO MPCA-2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO MPCA-2)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A3R1 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76R24D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5230 SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 4) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) CONT BUS BC3 3) MA73C PANEL 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: AOA: 3/3 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 85V73A129S9 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76R24D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5231 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 4)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) CONT BUS BC3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B MID 4)

5)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| | 701222712222 | | | |
|-----------------|--------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R | |
| LIFTOFF: | 3/3 | TAL: | 2/1R | |
| ONORBIT: | 2/1R | AOA: | 2/1R | |
| DEORBIT: | 2/1R | ATO: | 2/1R | |
| LANDING/SAFING: | 3/3 | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S9
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76R24D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5232 ABORT: 3/1R

ITEM: FUSE, 100A TO MPCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 100A TO MPCA-2
- 4) 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32F17

PART NUMBER: ME451-0016-2100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE SOURCES OF ESSENTIAL BUSS POWER ON TWO ESSENTIAL BUSSES. LOSS OF ALL POWER TO ESSENTIAL BUSSES COULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76R24C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5233 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 2) RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 3) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3

PRELAUNCH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/3 AOA: 3/3
DEORBIT: 3/3 ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32R5 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76R24B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5234 RPC, 5A (TO MMCA-1) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 4) RPC, 5A (TO MMCA-1) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26RPC11 PART NUMBER: MC450-0017-1050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76R22H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5235 ABORT: 2/1R

ITEM: RPC, 5A (TO MMCA-1)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 5A (TO MMCA-1)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | 41/2 2 2 41:22 2 2 2 2 | | | |
|-----------------|------------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R | |
| LIFTOFF: | 3/3 | TAL: | 2/1R | |
| ONORBIT: | 2/1R | AOA: | 2/1R | |
| DEORBIT: | 2/1R | ATO: | 2/1R | |
| LANDING/SAFING: | 3/3 | | - | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC11 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76R22H

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5236 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|---|
| ITEM: RPC, 5A (TO MMCA-2) FAILURE MODE: FAILS ON | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 4) RPC, 5A (TO MMCA-2) 5) 6) 7) 8) 9) 05-6 | |
| CRITICALI | |
| FLIGHT PHASE HDW/FUNC | ABORT HDW/FUNC |
| PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 | RTLS: 3/3 TAL: 3/3 |
| ONORBIT: 3/3 | AOA: 3/3 |
| DEORBIT: 3/3 | ATO: 3/3 |
| LANDING/SAFING: 3/3 | 3,7 |
| REDUNDANCY SCREENS: A [] B | c [] |
| LOCATION: 40V76A26RPC10 PART NUMBER: MC450-0017-1050 | |
| CAUSES: PIECE PART STRUCTURAL FAILUSHOCK, THERMAL STRESS, VIBRATION | |
| EFFECTS/RATIONALE: NO EFFECT ON CREW/MISSION/VEHICLE AS CONFIGURATION. | THIS IS NORMAL FLIGHT |
| REFERENCES: 76R22G | |

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5237 ABORT: 2/1R

MDAC ID: 5237

ITEM: RPC, 5A (TO MMCA-2) FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 5A (TO MMCA-2)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | 41/2 2 4 41/2 2 2 2 2 2 | | | |
|----------------|-------------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R | |
| LIFTOFF: | 3/3 | TAL: | 2/1R | |
| ONORBIT: | 2/1R | AOA: | 2/1R | |
| DEORBIT: | 2/1R | ATO: | 2/1R | |
| LANDING/SAFING | : 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC10
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76R22G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5238 ABORT: 2/1R

ITEM: RPC, 5A (TO MMCA-3)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 5A (TO MMCA-3)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC22
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76R22E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5239 RPC, 5A (TO MMCA-3) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 2) 3) MPCA-2 RPC, 5A (TO MMCA-3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 TAL: LIFTOFF: ONORBIT: 3/3 AOA: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC22 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76R22E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5240 RPC, 5A (TO MMCA-4) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 RPC, 5A (TO MMCA-4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 TAL: AOA: LIFTOFF: 3/3 3/3 3/3 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26RPC23 PART NUMBER: MC450-0017-1050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

REFERENCES: 76R22D

EFFECTS/RATIONALE:

CONFIGURATION.

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS NORMAL FLIGHT

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 2/1R SUBSYSTEM: EPD&C ABORT: 2/1R MDAC ID: 5241

ITEM: RPC, 5A (TO MMCA-4)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- RPC, 5A (TO MMCA-4) 4)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC23 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76R22D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5242 ABORT: 3/1R

ITEM: FUSE, 35A TO H2/O2 HTR CONT ASSY #2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 35A TO H2/O2 HTR CONT ASSY #2

4)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F23

PART NUMBER: ME451-0016-2035 (?3035)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/02 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76R17H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5243 ABORT: 3/1R

ITEM: FUSE, 50A TO H2/O2 HTR CONT ASSY #3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 50A TO H2/O2 HTR CONT ASSY #3
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | • | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F24

PART NUMBER: ME451-0016-2050 (?3050)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/O2 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76R12H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5244 ABORT: 3/1R

ITEM: FUSE, 50A TO H2/O2 HTR CONT ASSY #4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 50A TO H2/O2 HTR CONT ASSY #4
- 4) 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A32F25

PART NUMBER: ME451-0016-2050 (?3050)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/O2 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76R7H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5245 ABORT: 3/1R

ITEM: FUSE, 150A TO APCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) FUSE, 150A TO APCA-2
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| 01/T T T 011DT T T T D D | | | |
|--------------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 55V76A135F3
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO LOADS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76S24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 1/1

SUBSYSTEM: EPD&C FLIGHT: 1/1
MDAC ID: 5246 ABORT: 1/1

ITEM: FUSE, 100A TO ALCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) FUSE, 100A TO ALCA-2
- 5) 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 1/1 | TAL: | 1/1 |
| ONORBIT: | 3/1R | AOA: | 1/1 |
| DEORBIT: | 1/1 | ATO: | 1/1 |
| LANDING/SAFING: | | | • |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 55V76A135F6

PART NUMBER: ME451-0016-0100(?-2100)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE CAUSES LOSS OF POWER TO MPS LH2 VALVE SOLENOIDS.
THIS RESULTS IN THE INABILITY TO DUMP RESIDUAL LH2 PRIOR TO
DEORBIT WHICH COULD CAUSE LOSS OF CREW/VEHICLE DUE TO GH2 MIXING
WITH ATMOSPHERIC GO2 WITH A PROBABLE EXPLOSION.

REFERENCES: 76S9H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5247 RESISTOR, 1.8K 1/4W (TO SIG COND OA2) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B 1) MAIN DC DIST ASSY #2 2) 3) APCA-5 RESISTOR, 1.8K 1/4W (TO SIG COND OA2) 4) 5) 6) 7) 8) 9) 05-6

CRITICALITIES

| ~ | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135A1R63
PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76S8H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5248 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO APCA-5) --

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC2
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO APCA-5)

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| | V-1 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A3R2 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76T24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5249 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN B AFT 2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) CONT BUS AB3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B AFT 2)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S10
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD CAUSE THE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CLOSE DOORS AND CONTROL RCS VALVES.

REFERENCES: 76T23H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5250 SWITCH, TOGGLE SPST (MCA LOGIC MN B AFT 2) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) CONT BUS AB3 3) MA73C PANEL 4) SWITCH, TOGGLE SPST (MCA LOGIC MN B AFT 2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 85V73A129S10 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS THIS SWITCH IS NORMALLY ON. REFERENCES: 76T23H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5251 ABORT: 2/1R

ITEM: RPC, 5A (TO AMCA-2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) RPC, 5A (TO AMCA-2)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 2/1R |
| 2/1R | TAL: | 2/1R |
| 2/1R | AOA: | 2/1R |
| 2/1R | ATO: | 2/1R |
| 3/3 | | • |
| | 3/3 2/1R 2/1R 2/1R | 3/3 RTLS: 2/1R TAL: 2/1R AOA: 2/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 55V76A135RPC24
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE CAUSES LOSS OF ONE MCA BUS. CRITICAL LOADS ARE REDUNDANTLY POWERED. SECOND FAILURE TO ONE OF THESE LOADS MAY CAUSE LOSS OF CREW/VEHICLE, IF DOOR CLOSURE COULD NOT BE PERFORMED PRIOR TO ENTRY.

REFERENCES: 76T17H

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5252 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|---|
| ITEM: RPC, 5A (TO AMCA-2) FAILURE MODE: FAILS CLOSED | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) APCA-5 4) RPC, 5A (TO AMCA-2) 5) 6) 7) 8) | en e |
| 9) 05-6 | |
| CRITICAL | ITIES |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| · | s[] c[] |
| LOCATION: 55V76A135RPC24 PART NUMBER: MC450-0017-1050 | |
| CAUSES: PIECE PART STRUCTURAL FAILUSHOCK, THERMAL STRESS, VIBRATION | RE, CONTAMINATION, MECH |
| EFFECTS/RATIONALE: NO EFFECT AS THIS IS THE NORMAL FLIC | GHT CONFIGURATION. |

REFERENCES: 76T17H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

SUBSYSTEM: EPD&C FLIGHT: 3/21 MDAC ID: 5253 ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W (TO P/L AUX BUS - MPCA-1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIAI PANEL
- 3) RESISTOR, 1.2K 2W (TO P/L AUX BUS MPCA-1)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | , | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A1A1A11R1
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF THIS ITEM WOULD RESULT IN LOSS OF REDUNDANT POWER TO A P/L BUS. LOSS OF ALL REDUNDANCY COULD RESULT IN LOSS OF MISSION DUE TO LACK OF PAYLOAD POWER/CONTROL.

REFERENCES: 76U23H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5254 ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W (TO P/L AUX BUS - MPCA-2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAI PANEL
- 3) RESISTOR, 1.2K 2W (TO P/L AUX BUS MPCA-2)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73AlA1A11R2
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF THIS ITEM WOULD RESULT IN LOSS OF REDUNDANT POWER TO A P/L BUS. LOSS OF ALL REDUNDANCY COULD RESULT IN LOSS OF MISSION DUE TO LACK OF PAYLOAD POWER/CONTROL.

AND THE PROPERTY OF THE PROPER

REFERENCES: 76U22H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

MDAC ID: 5255 ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W (TO P/L CABIN BUS - MPCA-2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIAL PANEL
- 3) RESISTOR, 1.2K 2W (TO P/L CABIN BUS MPCA-2)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | | |
|----------|-----------------------------|--|--|--|
| 3/3 | RTLS: | 3/3 | | |
| 3/2R | TAL: | 3/3 | | |
| 3/2R | AOA: | 3/3 | | |
| 3/2R | ATO: | 3/3 | | |
| : 3/3 | | | | |
| | 3/3 3/2R 3/2R 3/2R | 3/3 RTLS: 3/2R TAL: 3/2R AOA: 3/2R ATO: | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A1A1A10R2 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF THIS ITEM WOULD RESULT IN LOSS OF REDUNDANT POWER TO A P/L BUS. LOSS OF ALL REDUNDANCY COULD RESULT IN LOSS OF MISSION DUE TO LACK OF PAYLOAD POWER/CONTROL.

REFERENCES: 76U20H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

MDAC ID: 5256 ABORT: 3/3

ITEM: RESISTOR, 1.2K 2W (TO P/L CABIN BUS - MPCA-1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) R1A1 PANEL
- 3) RESISTOR, 1.2K 2W (TO P/L CABIN BUS MPCA-1)

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | - |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A1A1A10R1
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF THIS ITEM WOULD RESULT IN LOSS OF REDUNDANT POWER TO A P/L BUS. LOSS OF ALL REDUNDANCY COULD RESULT IN LOSS OF MISSION DUE TO LACK OF PAYLOAD POWER/CONTROL.

REFERENCES: 76U18H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5257 MDAC ID: ITEM: SWITCH, TOGGLE DPDT (PAYLOAD AUX) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUSSES A & B 2) RIAI PANEL SWITCH, TOGGLE DPDT (PAYLOAD AUX) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1S29 PART NUMBER: ME452-0102-7201

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

EFFECTS/RATIONALE:

CONTAMINATION

NO EFFECT AS THIS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76U24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

MDAC ID: 5258 ABORT: 3/3

ITEM: SWITCH, TOGGLE DPDT (PAYLOAD AUX)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

1) MAIN DC BUSSES A & B

2) RIAI PANEL

3) SWITCH, TOGGLE DPDT (PAYLOAD AUX)

4) 5)

6) 7)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73AlAlS29
PART NUMBER: ME452-0102-7201

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF MISSION DUE TO LOSS OF POWER TO PAYLOAD LOADS.

REFERENCES: 76U24H

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5259 SWITCH, TOGGLE SPDT (PAYLOAD CABIN) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUSSES A & B 2) RIAL PANEL 3) SWITCH, TOGGLE SPDT (PAYLOAD CABIN) 4) 5) 6)

9) 05-6

CRITICALITIES

| 41/4 T T 4117 T T T T T T T T T T T T T T T T T T | | | |
|---|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A1A1S25 PART NUMBER: ME452-0102-7103

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

7) 8)

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76U20H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5260 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD CABIN)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUSSES A & B
- 2) RIAL PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD CABIN)

4) 5)

6)

7)

8) 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|---------------------------|--|--|
| 3/3 | RTLS: | 3/3 | |
| 3/3 | TAL: | 3/3 | |
| 3/2R | AOA: | 3/3 | |
| 3/3 | ATO: | 3/3 | |
| 3/3 | | • | |
| | 3/3 3/3 3/2R 3/3 | 3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/3 ATO: | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S25
PART NUMBER: ME452-0102-7103

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF MISSION DUE TO INABILITY TO POWER PAYLOAD FUNCTIONS.

REFERENCES: 76U20H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5261 RESISTOR, 5.1K 1/4W (TO MDM OF4) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC RIAL PANEL 2) RESISTOR, 5.1K 1/4W (TO MDM OF4) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF:

ONORBIT: 3/3 AOA: 3/3
DEORBIT: 3/3 ATO: 3/3
LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A1A1A12R1
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76U24H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5262 ITEM: RESISTOR, 5.1K 1/4W (TO MDM OF4) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 2CA 2) RIAI PANEL RESISTOR, 5.1K 1/4W (TO MDM OF4) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] LOCATION: 32V73A1A1A12R2 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION. REFERENCES: 76U19H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5263 RESISTOR, 5.1K 1/4W (TO MDM OF4) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: ESS BUS 1BC 1) 2) RIA1 PANEL RESISTOR, 5.1K 1/4W (TO MDM OF4) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT:

REDUNDANCY SCREENS: A [] B [] C []

3/3

LOCATION: 32V73A1A1A12R3 PART NUMBER: RLR07C512GR

LANDING/SAFING: 3/3

DEORBIT:

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76U21H

C- <1

ATO:

3/3

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/2R

MDAC ID:

5264

ABORT:

3/3

ITEM:

RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- MPCA-1
- 4) RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

LOCATION: 40V76A25RPC20

PART NUMBER: MC450-0017-1200

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

REDUNDANCY SCREENS: A [1] B [P] C [P]

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO POWER SOURCES TO THE PAYLOAD AUX BUS. WORST CASE EFFECT IS POSSIBLE LOSS OF MISSION.

REFERENCES: 76U23D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5265 RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS A 2) MAIN DC DIST ASSY #1 MPCA-1 3) RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES 4) 5) 6) 7) 8) 9) 05 - 6CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|--------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| | | | · · |

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC20 PART NUMBER: MC450-0017-1200

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76U23D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5266 ITEM: RPC, 15A TO PAYLOAD CABIN FAILURE MODE: FAILS CLOSED SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) MPCA-1 4) RPC, 15A TO PAYLOAD CABIN 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3

ATO:

3/3

REDUNDANCY SCREENS: A [] B [] C []

3/3

LOCATION: 40V76A25RPC21
PART NUMBER: MC450-0017-1150

LANDING/SAFING: 3/3

DEORBIT:

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS RPC IS NORMALLY ON AND THIS FAILURE WOULD KEEP THE P/L PANELS POWERED. POWER CAN BE REMOVED FROM THE P/L LOADS BY A SWITCH IN PANEL RIAL.

REFERENCES: 76U20E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 3/2R SUBSYSTEM: EPD&C

ABORT: 3/3 MDAC ID: 5267

RPC, 15A TO PAYLOAD CABIN ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- RPC, 15A TO PAYLOAD CABIN 4)
- 5)
- 6)
- 7) 8)
- 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A25RPC21 PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO P/L PANELS. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF MISSION DUE TO INABILITY TO POWER P/L PANELS.

REFERENCES: 76U20E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5268 RPC, 15A TO PAYLOAD CABIN ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) MPCA-1 4) RPC, 15A TO PAYLOAD CABIN 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: TAL: AOA: PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: ONORBIT: 3/3 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] LOCATION: 40V76A25RPC22 PART NUMBER: MC450-0017-1150 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE:

REFERENCES: 76U2OD

SWITCH IN PANEL RIAL.

THIS RPC IS NORMALLY ON AND THIS FAILURE WOULD KEEP THE P/L PANELS POWERED. POWER CAN BE REMOVED FROM THE P/L LOADS BY A

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5269 ABORT: 3/3

ITEM: RPC, 15A TO PAYLOAD CABIN

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 15A TO PAYLOAD CABIN
- 5) 6)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|---------------------------|--|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/2R | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | - |
| | 3/3 3/3 3/2R 3/3 | 3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A25RPC22 PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO P/L PANELS. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF MISSION DUE TO INABILITY TO POWER P/L PANELS.

REFERENCES: 76U20D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5270 MDAC ID: ITEM: RPC, 15A TO PAYLOAD CABIN FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) MPCA-1 4) RPC, 15A TO PAYLOAD CABIN 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25RPC23 PART NUMBER: MC450-0017-1150

EFFECTS/RATIONALE:

SHOCK, THERMAL STRESS, VIBRATION

THIS RPC IS NORMALLY ON AND THIS FAILURE WOULD KEEP THE P/L PANELS POWERED. POWER CAN BE REMOVED FROM THE P/L LOADS BY A SWITCH IN PANEL RIAL.

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

REFERENCES: 76U20C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5271 ABORT: 3/3

ITEM: RPC, 15A TO PAYLOAD CABIN

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 15A TO PAYLOAD CABIN
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | V1/2 2 4 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 | | | |
|-----------------|--|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A25RPC23
PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO P/L PANELS. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF MISSION DUE TO INABILITY TO POWER P/L PANELS.

REFERENCES: 76U20C

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5272 RESISTOR, 1.8K (TO MDM OF1) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 2) 3) MPCA-1 4) RESISTOR, 1.8K (TO MDM OF1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 AOA: ONORBIT: 3/3 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A1R9 PART NUMBER: RLR07C1801GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO

REFERENCES: 76U24C

FLIGHT/VEHICLE OPERATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5273 ABORT: 3/3

ITEM: RESIS

RESISTOR, 2.2K (TO MDM OF1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RESISTOR, 2.2K (TO MDM OF1)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A1R10
PART NUMBER: RLR20C222GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76U24C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5274 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) R1A1 PANEL
- 3) MPCA-1
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A25A2CR5
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE PROBABLE LOSS OF MISSION DUE TO LACK OF POWER TO P/L LOADS.

REFERENCES: 76U19E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5275 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) R1A1 PANEL
- 3) MPCA-1
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)
- 5) 6)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A25A2CR5
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE MAIN BUS A AND MAIN BUS B TOGETHER AT THE OUTPUT OF AN RPC. DEPENDING ON P/L CABIN BUS LOADING, THE RPC COULD FAIL DUE TO EXCESSIVE REVERSE CURRENT. THIS WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD PROBABLY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO P/L LOADS.

REFERENCES: 76U19E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5276 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIA1 PANEL
- 3) MPCA-1
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A25A2CR6
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE MAIN BUS A AND MAIN BUS B TOGETHER AT THE OUTPUT OF AN RPC. DEPENDING ON P/L CABIN BUS LOADING, THE RPC COULD FAIL DUE TO EXCESSIVE REVERSE CURRENT. THIS WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS.
LOSS OF ALL REDUNDANCY WOULD PROBABLY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO P/L LOADS.

REFERENCES: 76U19D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

MDAC ID: 5277 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIAL PANEL
- 3) MPCA-1
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| | C1/T T T C1: | | |
|-----------------|--------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A25A2CR6
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE PROBABLE LOSS OF MISSION DUE TO LACK OF POWER TO P/L LOADS.

REFERENCES: 76U19D

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

5278

FLIGHT:

3/2R

ITEM:

DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

ABORT:

3/3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIA1 PANEL
- MPCA-1 3)
- DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5)

6) 7)

8)

05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:

40V76A25A2CR7

PART NUMBER: JANTXIN1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE PROBABLE LOSS OF MISSION DUE TO LACK OF POWER TO P/L LOADS.

REFERENCES: 76U19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5279 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIAI PANEL
- 3) MPCA-1
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| | O1(2 1 T O112 1 T T T T | | | |
|-------------------|-------------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/2R | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/2R | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | · | |
| TWINDTING SWLTING | . 3/3 | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A25A2CR7
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE MAIN BUS A AND MAIN BUS B TOGETHER AT THE OUTPUT OF AN RPC. DEPENDING ON P/L CABIN BUS LOADING, THE RPC COULD FAIL DUE TO EXCESSIVE REVERSE CURRENT. THIS WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD PROBABLY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO P/L LOADS.

REFERENCES: 76U19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5280 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAI PANEL
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A26A2CR7
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE MAIN BUS A AND MAIN BUS B TOGETHER AT THE OUTPUT OF AN RPC. DEPENDING ON P/L CABIN BUS LOADING, THE RPC COULD FAIL DUE TO EXCESSIVE REVERSE CURRENT. THIS WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS.
LOSS OF ALL REDUNDANCY WOULD PROBABLY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO P/L LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5281 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAL PANEL
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| V1/2-1-1-1 | | |
|---------------------|-----------------------------|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/3 |
| 3/2R | TAL: | 3/3 |
| 3/2R | AOA: | 3/3 |
| • | ATO: | 3/3 |
| : 3 [′] /3 | | • |
| | 3/3 3/2R 3/2R 3/2R | 3/3 RTLS: 3/2R TAL: 3/2R AOA: 3/2R ATO: |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A26A2CR7
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE PROBABLE LOSS OF MISSION DUE TO LACK OF POWER TO P/L LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5282 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAL PANEL
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A26A2CR6
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE PROBABLE LOSS OF MISSION DUE TO LACK OF POWER TO P/L LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5283 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAI PANEL
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5) 6)

6) 7)

8)

9) 05-6

CRITICALITIES

| | V1/12 2 V1/12 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | | |
|----------------|---|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/2R | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/2R | ATO: | 3/3 | |
| LANDING/SAFING | : 3/3 | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A26A2CR6
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE MAIN BUS A AND MAIN BUS B TOGETHER AT THE OUTPUT OF AN RPC. DEPENDING ON P/L CABIN BUS LOADING, THE RPC COULD FAIL DUE TO EXCESSIVE REVERSE CURRENT. THIS WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD PROBABLY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO P/L LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

5284

FLIGHT: ABORT:

3/2R 3/3

ITEM:

DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- RIAL PANEL
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A26A2CR5

PART NUMBER: JANTXIN1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE MAIN BUS A AND MAIN BUS B TOGETHER AT THE OUTPUT OF AN RPC. DEPENDING ON P/L CABIN BUS LOADING, THE RPC COULD FAIL DUE TO EXCESSIVE REVERSE CURRENT. THIS WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD PROBABLY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO P/L LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

MDAC ID: 5285 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO PAYLOAD CABIN)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAL PANEL
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (TO PAYLOAD CABIN)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | 41/4 2 4 4112 2 2 2 2 | | | |
|-----------------|-----------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/2R | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/2R | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A26A2CR5
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF SIX SOURCES TO THE P/L CABIN BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE PROBABLE LOSS OF MISSION DUE TO LACK OF POWER TO P/L LOADS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 MDAC ID: 5286 ABORT: RPC, 15A TO PAYLOAD CABIN ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 4) RPC, 15A TO PAYLOAD CABIN 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26RPC19 PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS RPC IS NORMALLY ON AND THIS FAILURE WOULD KEEP THE P/L PANELS POWERED. POWER CAN BE REMOVED FROM THE P/L LOADS BY A SWITCH IN PANEL RIAL.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5287 ABORT: 3/3

ITEM: RPC, 15A TO PAYLOAD CABIN

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 15A TO PAYLOAD CABIN
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | 01/2 1 2 01:DZ 1 ZZ | | | |
|-----------------|---------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26RPC19
PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO P/L PANELS. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF MISSION DUE TO INABILITY TO POWER P/L PANELS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5288 RPC, 15A TO PAYLOAD CABIN ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 4) RPC, 15A TO PAYLOAD CABIN 5) 6) 7) 8) 9) 05-6 CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC20 PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS RPC IS NORMALLY ON AND THIS FAILURE WOULD KEEP THE P/L PANELS POWERED. POWER CAN BE REMOVED FROM THE P/L LOADS BY A SWITCH IN PANEL RIAL.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: SUBSYSTEM: EPD&C

3/2R 3/3 ABORT: MDAC ID: 5289

RPC, 15A TO PAYLOAD CABIN ITEM:

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B 1)
- 2) MAIN DC DIST ASSY #2

FAILURE MODE: FAILS OPEN

- MPCA-2 3)
- RPC, 15A TO PAYLOAD CABIN 4)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| | 01/2 + T 011 D T T T T T T T T T T T T T T T T T T | | | |
|-----------------|--|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | | |
| | | | | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26RPC20 PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO P/L PANELS. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF MISSION DUE TO INABILITY TO POWER P/L PANELS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5290 MDAC ID: RPC, 15A TO PAYLOAD CABIN ITEM: FAILURE MODE: FAILS CLOSED SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 RPC, 15A TO PAYLOAD CABIN 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26RPC21 PART NUMBER: MC450-0017-1150 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS RPC IS NORMALLY ON AND THIS FAILURE WOULD KEEP THE P/L PANELS POWERED. POWER CAN BE REMOVED FROM THE P/L LOADS BY A SWITCH IN PANEL RIAL.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R

MDAC ID: 5291 ABORT: 3/3

ITEM: RPC, 15A TO PAYLOAD CABIN

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 15A TO PAYLOAD CABIN
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26RPC21
PART NUMBER: MC450-0017-1150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO P/L PANELS. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF MISSION DUE TO INABILITY TO POWER P/L PANELS.

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/2R

MDAC ID:

5292

ABORT:

3/3

ITEM:

RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER

SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3)
- 4) RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

40V76A26RPC18

PART NUMBER: MC450-0017-1200

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO POWER SOURCES TO THE PAYLOAD AUX BUS. WORST CASE EFFECT IS POSSIBLE LOSS OF MISSION.

REFERENCES: 76U22D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5293 ABORT: 3/3

ITEM: RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 20A TO P/L AUX & P/L EMERGENCY BUSSES
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| 41/21241212 | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC18
PART NUMBER: MC450-0017-1200

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76U22D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5294 RESISTOR, 1.8K (TO MDM OF2) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 4) RESISTOR, 1.8K (TO MDM OF2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A1R5 PART NUMBER: RLR07C1801GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5295 ABORT: 3/3

ITEM: RESISTOR, 2.2K (TO MDM OF2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RESISTOR, 2.2K (TO MDM OF2)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | O1/T T T O11 T T T T T T | | | |
|-----------------|--------------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | | |
| | | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A1R6
PART NUMBER: RLR20C222GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76U22C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5296

ABORT:

3/3

ITEM:

RPC, 7.5A (P/L PWR KILL MAIN B/C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER

SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- PAYLOAD EMERGENCY BUS
- ESS BUS 2CA 2)
- 3) MPCA 2
- 4) RPC, 7.5A (P/L PWR KILL MAIN B/C)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC27

PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF CAPABILITY TO CUT PAYLOAD POWER FROM MAIN DC BUSSES B AND C. NO EFFECT UNLESS THE REMOVAL OF POWER IS REQUIRED, IN WHICH CASE, THERE IS A POSSIBILITY OF LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

SUBSYSTEM: EPD&C FLIGHT: 3/21 MDAC ID: 5297 ABORT: 3/3

ITEM: RPC, 7.5A (P/L PWR KILL MAIN B/C)

FAILURE MODE: INADVERTENT OPERATION

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) PAYLOAD EMERGENCY BUS
- 2) ESS BUS 2CA
- 3) MPCA 2
- 4) RPC, 7.5A (P/L PWR KILL MAIN B/C)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC27
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT ON CREW/VEHICLE ALTHOUGH LOSS OF MISSION IS POSSIBLE IF BACKUP POWER IS NOT AVAILABLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #2 -

The second of th

MDAC ID: 5298 ABORT: 3/3

ITEM: P/L PWR KILL)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MPCA-2
- 3) DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #2 P/L PWR KILL)
 - 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/1R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | · | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26A2CR8
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT PATH TO KILL POWER TO THE P/L BAY. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO KILL POWER TO P/L BAY LOADS IF REQUIRED.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5299 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #2 -

P/L PWR KILL)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MPCA-2
- 3) DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #2 P/L PWR KILL)
 - 4)
 - 5)
 - 6)
 - 7)
 - 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | | | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26A2CR8
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE THE P/L BAY POWER KILL REDUNDANT PATHS TOGETHER CAUSING THE REMOVAL OF MAIN BUS B AND C IF ONE OF THE MAIN DC BUSSES IS SWITCHED OUT FROM PANEL RIAL. POSSIBLE LOSS OF MISSION DUE TO LOSS OF POWER TO THE P/L BAY LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5300 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #3 -

P/L PWR KILL)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MPCA-2
- 3) DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #3 P/L PWR KILL)
 - 4)
 - 5)
 - 6)
 - 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26A2CR13
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD TIE THE P/L BAY POWER KILL REDUNDANT PATHS TOGETHER CAUSING THE REMOVAL OF MAIN BUS B AND C IF ONE OF THE MAIN DC BUSSES IS SWITCHED OUT FROM PANEL RIAL.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5301 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #3 -

P/L PWR KILL)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MPCA-2
- 3) DIODE, ISOLATION 35A (TO MAIN DC DIST ASSY #3 P/L PWR KILL)
 - 4)
 - 5)
 - 6)
 - 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26A2CR13
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT PATH TO KILL POWER TO THE P/L BAY. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW VEHICLE DUE TO INABILITY TO KILL POWER TO P/L BAY LOADS IF REQUIRED.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5302 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO P/L PWR KILL - FC#3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MPCA-3
- 3) DIODE, ISOLATION 35A (TO P/L PWR KILL FC#3)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A27A2CR6
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH TO KILL POWER TO P/L BAY FROM FUEL CELL #3. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF CREW/VEHICLE IF P/L BAY POWER IS REQUIRED TO BE TURNED OFF.

REFERENCES: 76Ul3H

HDW/FUNC HIGHEST CRITICALITY DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5303 MDAC ID: DIODE, ISOLATION 35A (TO P/L PWR KILL - FC#3) ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: ESS BUS 3AB 1) MPCA-3 2) DIODE, ISOLATION 35A (TO P/L PWR KILL - FC#3) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] 40V76A27A2CR6 LOCATION: PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT

REFERENCES: 76U13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5304 ABORT: 3/3

ITEM: RPC, 7.5A (P/L PWR KILL F/C#3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) PAYLOAD EMERGENCY BUS
- 2) ESS BUS 3AB
- 3) MPCA 3
- 4) RPC, 7.5A (P/L PWR KILL F/C#3)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A27RPC16
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO CUT POWER TO THE PAYLOAD FROM FUEL CELL #3. POSSIBLE LOSS OF CREW/VEHICLE IF POWER REMOVAL WERE REQUIRED.

REFERENCES: 76U13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R

SUBSYSTEM: EPD&C FLIGHT: 3/21 MDAC ID: 5305 ABORT: 3/3

ITEM: RPC, 7.5A (P/L PWR KILL F/C#3)

FAILURE MODE: INADVERTENT OPERATION

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) PAYLOAD EMERGENCY BUS
- 2) ESS BUS 3AB
- 3) MPCA 3
- 4) RPC, 7.5A (P/L PWR KILL F/C#3)

5)

6) 7) ·

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A27RPC16
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT POWER SOURCE TO THE PAYLOAD. LOSS OF ALL REDUNDANCY MIGHT CAUSE LOSS OF MISSION.

REFERENCES: 76U13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5306 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD PRI MN B)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIA1 PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD PRI MN B)

4) 5)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

32V73A1A1S26

PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS SWITCH DRIVES A MOTORIZED SWITCH TO CONNECT MAIN DC BUS POWER TO THE PAYLOADS. REDUNDANT POWER IS AVAILABLE. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U13F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/2R FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3

SWITCH, TOGGLE SPDT (PAYLOAD PRI MN B) ITEM:

FAILURE MODE: INADVERTENT TRANSFER

5307

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAI PANEL
- SWITCH, TOGGLE SPDT (PAYLOAD PRI MN B) 3)
- 5) 6)
- 7) 8)
- 9) 05-6

MDAC ID:

CRITICALITIES

| HDW/FUNC |
|----------|
| 3/3 |
| 3/3 |
| 3/3 |
| 3/3 |
| |
| |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S26 PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS SWITCH DRIVES A MOTORIZED SWITCH TO CONNECT MAIN DC BUS POWER TO THE PAYLOADS. REDUNDANT POWER IS AVAILABLE. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U13F

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 3/2R

MDAC ID:

5308

ABORT:

3/3

ITEM:

SWITCH, TOGGLE SPDT (PAYLOAD PRI F/C#3)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) Rlal PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD PRI F/C#3)

4)

5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 - |
| DEORBÎT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P] C [P]

LOCATION: 32V73A1A1S27

PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS SWITCH CONTROLS A MOTORIZED SWITCH THAT TRANSFERS POWER FROM FUEL CELL #3 TO PAYLOADS. REDUNDANT POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U13C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5309 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD PRI F/C#3)

FAILURE MODE: INADVERTENT TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) RIAI PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD PRI F/C#3)
- 4) 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73AlAlS27
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS SWITCH CONTROLS A MOTORIZED SWITCH THAT TRANSFERS POWER FROM FUEL CELL #3 TO PAYLOADS. REDUNDANT POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U13C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5310 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD PRI MN C)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) RIAI PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD PRI MN C)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73AlA1S28
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS SWITCH DRIVES A MOTORIZED SWITCH TO CONNECT MAIN DC BUS POWER TO THE PAYLOADS. REDUNDANT POWER IS AVAILABLE. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U13D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5311 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD PRI MN C)

FAILURE MODE: INADVERTENT TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) RIAI PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD PRI MN C)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S28
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

THIS SWITCH DRIVES A MOTORIZED SWITCH TO CONNECT MAIN DC BUS POWER TO THE PAYLOADS. REDUNDANT POWER IS AVAILABLE. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U13D

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE:

FLIGHT: SUBSYSTEM: EPD&C 3/2R MDAC ID: 5312 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (MAIN DC BUS B TO PAYLOAD)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- MAIN DC DIST ASSY #2 2)
- SWITCH, MOTORIZED (MAIN DC BUS B TO PAYLOAD)
- 4) 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32S3

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK, VIBRATION,

CONTAMINATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT POWER PATH TO PAYLOAD. LOSS OF ALL REDUNDANT POWER TO PAYLOAD WOULD LIKELY CAUSE LOSS OF MISSION. NO EFFECT ON CREW OR VEHICLE.

REFERENCES: 76UlOF

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5313 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (MAIN DC BUS B TO PAYLOAD)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) SWITCH, MOTORIZED (MAIN DC BUS B TO PAYLOAD)
- 4)
- 5) 6)
- 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | O1/1 1 1 O4 | | |
|----------------|-------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION:

40V76A32S3

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK, VIBRATION,

CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS SWITCH IS NORMALLY CLOSED FOR FLIGHT OPERATION.

REFERENCES: 76UlOF

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5314 | | HIGHEST | CRITICALITY FLIGHT: ABORT: | HDW/FUNC 3/3 3/3 |
|---|--------------------|-----------|----------------------------------|------------------------|
| ITEM: RESISTO FAILURE MODE: FAILS OF | | (TO MDM O |)F3) | |
| LEAD ANALYST: K. SCHME | CKPEPER | SUBSYS I | EAD: K. SCHM | ECKPEPER |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY 3) RESISTOR, 5.1K 1/4 4) 5) 6) 7) | #2 W (TO MDM OF | | | |
| 8) 9) 05-6 | | | | |
| | CRITICAL | TIES | | |
| FLIGHT PHASE | IDW/FUNC | ABORT | HDW/FUN | C |
| PRELAUNCH: | 3/3 | | s: 3/3 | |
| | 3/3 | TAL | | |
| ONORBIT: | 3/3 3/3 | AOA | | |
| DEORBIT: LANDING/SAFING: | 3/3 3/3 | ATO | 3/3 | |
| REDUNDANCY SCREENS: | \ [] I | 3 [] | c [] | |
| LOCATION: 40V76A321 PART NUMBER: RLR07C512 | | | | - |
| CAUSES: CONTAMINATION, | THERMAL STRE | SS, VIBR | ATION, MECH | SHOCK |
| EFFECTS/RATIONALE: THIS MEASUREMENT IS NO ALTERNATE INDICATOR (TA | | | | AN |

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5315 RESISTOR, 1.2K 2W FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) ESS BUS 2CA 4) RESISTOR, 1.2K 2W 5) 6) 7) 8) 9) 05-6

CRITICALITIES

| | CVIIICN | 1111110 | |
|----------------|----------|---------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32R13
PART NUMBER: RWR71S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPLIES NON-CRITICAL MEASUREMENT CIRCUITS.

REFERENCES: 76U9F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5316 ABORT: 3/3

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 3 (PAYLOAD)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 150A TO MAIN DC DIST ASSY 3 (PAYLOAD)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F39

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U9E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5317 ABORT: 3/3

ITEM: FUSE, 150A TO MAIN DC DIST ASSY 3 (PAYLOAD)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 150A TO MAIN DC DIST ASSY 3 (PAYLOAD)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | CVIIICU | 777770 | |
|----------------|----------|--------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F40
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U9E

DATE: 3/11/87 SUBSYSTEM: EPD&C

HIGHEST CRITICALITY HDW/FUNC

FLIGHT: 3/1R

MDAC ID:

5318

ABORT: 3/1R

ITEM:

SWITCH, TOGGLE SPDT (FC 3 STRUCT RTN)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 013 PANEL 2)
- 3) 012 PANEL
- SWITCH, TOGGLE SPDT (FC 3 STRUCT RTN)

6)

7)

8)

05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P] THE HERE

LOCATION:

36V73A12S30

PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, VIBRATION

EFFECTS/RATIONALE:

FAILURE OF THIS SWITCH TO POWER THE CONTACTOR AFTER THE DC RETURN PATH HAS BEEN INTERRUPTED WOULD MEAN THAT MAIN DC BUS C LOADS WOULD BE LOST. BUS TIE COULD BE PERFORMED. LOSS OF ALL REDUNDANT POWER TO BUS C LOADS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76U6H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5319 ABORT: 3/1R

ITEM: SWITCH, TOGGLE SPDT (FC 3 STRUCT RTN)

FAILURE MODE: INADVERTENT TRANSFERS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) 013 PANEL
- 3) 012 PANEL
- 4) SWITCH, TOGGLE SPDT (FC 3 STRUCT RTN)

5) 6)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| | O1/4 + - O1 | | |
|----------------|-------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 36V73A12S30
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, VIBRATION

EFFECTS/RATIONALE:

FAILURE OF THIS SWITCH TO POWER THE CONTACTOR AFTER THE DC RETURN PATH HAS BEEN INTERRUPTED WOULD MEAN THAT MAIN DC BUS C LOADS WOULD BE LOST. BUS TIE COULD BE PERFORMED. LOSS OF ALL REDUNDANT POWER TO BUS C LOADS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76U6H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5320 ABORT: 3/3

ITEM: FUSE, 150A TO PAYLOAD

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MAIN DC DIST ASSY #3
- 4) FUSE, 150A TO PAYLOAD
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F41

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U6E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5321 ABORT: 3/3

ITEM: FUSE, 150A TO PAYLOAD

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MAIN DC DIST ASSY #3
- 4) FUSE, 150A TO PAYLOAD
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING | : 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F42
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U7E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5322 ABORT: 3/3

ITEM: FUSE, 200A TO PAYLOAD

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3

3) FUSE, 200A TO PAYLOAD

4) 5)

6) 7)

8) 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|--------------------|--|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/2R | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | • |
| | 3/3 3/2R 3/3 | 3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F34

PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U4D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5323 ABORT: 3/3

ITEM: FUSE, 200A TO PAYLOAD

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 200A TO PAYLOAD
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| O1/4 7 7 O1/ | | |
|--------------|---------------------------------------|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/2R | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | | |
| | HDW/FUNC 3/3 3/3 3/2R 3/3 | 3/3 RTLS: 3/3 TAL: 3/2R AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F35
PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U4D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5324 ABORT: 3/3

ITEM: FUSE, 200A TO PAYLOAD

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 200A TO PAYLOAD
- 4) 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | · | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F39

PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U4E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/2R SUBSYSTEM: EPD&C

3/3 ABORT: MDAC ID: 5325

FUSE, 200A TO PAYLOAD

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- MAIN DC DIST ASSY #3 2)
- FUSE, 200A TO PAYLOAD 3)
- 4)
- 5)
- 6)
- 7) 8)
- 05-6 9)

CRITICALITIES

| | C1/T T T C1: | | |
|-----------------|--------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F40 PART NUMBER: ME451-0016-2150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE PAYLOADS. LOSS OF ALL POWER TO PAYLOADS WOULD PROBABLY RESULT IN LOSS OF MISSION.

REFERENCES: 76U4E

| | YSTEM: ID: | | | | F | IIGHEST | | SHT: | HDW/FUNC 3/3 3/3 |
|----------------|-------------------------------|---------------------------------------|------------|------|----------|------------|----------|----------------|------------------------|
| | | RESIST E: FAILS | | 2K 2 | W | an english | genn e. | | a a-a-rav |
| LEAD | ANALYST | : K. SCHM | ECKPEF | ER | Ş | UBSYS | LEAD: I | K. SCHM | ECKPEPER |
| 1) 2) 3) | MAIN DO MAIN DO ESS BUS | ERARCHY: BUS C DIST ASS AB OR, 1.2K 2 | ¥ #3 W | | | | | - | |
| 9) | 05-6 | | | | | | | | |
| | | | | CRIT | ICALII | IES | | | |
| I | FLIGHT E | PHASE | HDW/F | | | ABORT | r i | IDW/FUN | C |
| | PRELA | UNCH: | 3/3 | | ** | ŔI | LS: | 3/3 | |
| | LIFTO | FF: | 3/3 | | | T.F | AL: | 3/3 | |
| | ONORE | BIT: | 3/3 | | | AC | A: | 3/3 | |
| | DEORE | BIT: | 3/3 | | | ΑT | o: | 3/3 | |
| | LANDI | NG/SAFING | | | | | | · | |
| REDUN | NDANCY S | CREENS: | A [|] | В | [] | C | [] | |
| | | 40V76A3 RWR80S1 | | | ·· | | | | |
| CAUSE | es: con | TAMINATIO | N, THE | RMAL | STRES | s, VIE | RATION, | MECH | SHOCK |
| | TS/RATI | ONALE: JPPLIES NO | N-CRIT | ICAL | MEASU | JREMEN' | r circui | ITS. | er en alle e |

REFERENCES: 76U4D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: SUBSYSTEM: EPD&C 3/3 FLIGHT: 3/3 ABORT: MDAC ID: 5327 RESISTOR, 1.2K 2W FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C MAIN DC DIST ASSY #3 2) ESS BUS 3AB 3) RESISTOR, 1.2K 2W 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33R13 PART NUMBER: RWR71S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPLIES NON-CRITICAL MEASUREMENT CIRCUITS.

REFERENCES: 76U7C

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5328 | HIGHEST CRITICALITY HDW/F FLIGHT: 3/3 ABORT: 3/3 | * | | | | |
|--|--|----|--|--|--|--|
| ITEM: RESISTOR, 5.1K 1/4W FAILURE MODE: FAILS OPEN | (TO MDM OF3) | | | | | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEP | ER | | | | |
| BREAKDOWN HIERARCHY: 1) FUEL CELL #3 2) MAIN DC DIST ASSY #3 3) RESISTOR, 5.1K 1/4W (TO MDM OF A) 4) 5) 6) 7) 8) | F 74. 74. 1 21 F3) | | | | | |
| 9) 05-6 | | | | | | |
| CRITICAI | LTTTES | | | | | |
| FLIGHT PHASE HDW/FUNC | ABORT HDW/FUNC | | | | | |
| PRELAUNCH: 3/3 | RTLS: 3/3 | | | | | |
| LIFTOFF: 3/3 | TAL: 3/3 | | | | | |
| ONORBIT: 3/3 | AOA: 3/3 | | | | | |
| DEORBIT: 3/3 | ATO: 3/3 | | | | | |
| LANDING/SAFING: 3/3 | 3, 3 | | | | | |
| REDUNDANCY SCREENS: A [] | B [] C [] | | | | | |
| LOCATION: 40V76A33R12 PART NUMBER: RLR07C512GR | IN THE STATE OF TH | | | | | |
| CAUSES: CONTAMINATION, THERMAL STR | RESS, VIBRATION, MECH SHOCK | | | | | |
| EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS. AN ALTERNATE INDICATOR (TALKBACK) IS AVAILABLE. | | | | | | |

REFERENCES: 76U8B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 5329 MDAC ID: RESISTOR, 5.1K 1/4W (TO MDM OF3) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS C 1) MAIN DC DIST ASSY #3 3) RESISTOR, 5.1K 1/4W (TO MDM OF3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES

| CVIIICULIII | | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33R15 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS. AN ALTERNATE INDICATOR (TALKBACK) IS AVAILABLE.

REFERENCES: 76U8D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5330 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO DC RETURN FROM P/L BAY)
FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

1) FUEL CELL #3

2) MAIN DC DIST ASSY #3

3) DIODE, ISOLATION 35A (TO DC RETURN FROM P/L BAY)

4) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33CR5
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT DC RETURN PATH FOR POWER CONTACTOR MOTOR. SECOND FAILURE WOULD CAUSE AN INABILITY TO CHANGE THE POWER CONTACTOR SUPPLYING THE P/L BAY POWER. LOSS OF ALL CONTROL OF P/L BAY MAY CAUSE LOSS OF CREW/VEHICLE IF PAYLOAD BAY POWER IS REQUIRED OFF.

REFERENCES: 76U5B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5331 DIODE, ISOLATION 35A (TO DC RETURN FROM P/L BAY) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #3 2) MAIN DC DIST ASSY #3 3) DIODE, ISOLATION 35A (TO DC RETURN FROM P/L BAY) 4) 5) 6) 7) 8) 9) 05-6

CRITICALITIES

| CVTITCULLITIO | | | |
|---------------|--------------------------------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 3/3 | |
| 3/3 | TAL: | 3/3 | |
| 3/3 | AOA: | 3/3 | |
| 3/3 | ATO: | 3/3 | |
| : 3/3 | | | |
| | HDW/FUNC 3/3 3/3 3/3 3/3 | HDW/FUNC ABORT 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33CR5
PART NUMBER: JANTXIN1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT

REFERENCES: 76U5B

| DATE: SUBSYSTEM: EF MDAC ID: 53 | D&C | F | · • | ITICALITY FLIGHT: ABORT: | 3/3 |
|---------------------------------------|------------------------------|------------|------------|--------------------------------|--------------|
| ITEM: FAILURE MODE: | DIODE, ISOLA SHORTS | TION 35A (| TO DC RET | URN FROM P | /L BAY) |
| LEAD ANALYST: | K. SCHMECKPEP | ER S | UBSYS LEA | D: K. SCHM | ECKPEPER |
| 3) DIODE, IS 4) 5) 6) 7) | | | URN FROM P | /L BAY) | |
| 8) 9) 05-6 | | | | | |
| | | CRITICALIT | TES | | |
| FLIGHT PHA | פד שחש/ד | TNC | ABORT | HDW/FUN | C |
| PRELAUN | CH: 3/3 : 3/3 : 3/3 : 3/3 | | RTLS: | 3/3 | |
| LIFTOFF | ': 3/3 | | TAL: | 3/3 3/3 | |
| ONORBIT | 3/3 | | AOA: | 3/3 | |
| DEORBIT | !: 3/3 | | ATO: | 3/3 | |
| LANDING | S/SAFING: 3/3 | | | | |
| REDUNDANCY SCR | REENS: A [|) B | [] | c[] | 2000 |
| LOCATION: PART NUMBER: | | | | addition de laborate const | |
| CAUSES: CONTA | MINATION, THE | RMAL STRES | s, VIBRAT | ON, MECH | SHOCK |
| EFFECTS/RATION NO EFFECT | ALE: | | | | |

REFERENCES: 76U5C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5333 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (TO DC RETURN FROM P/L BAY)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #3
- 2) MAIN DC DIST ASSY #3
- 3) DIODE, ISOLATION 35A (TO DC RETURN FROM P/L BAY)

4)

5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/1R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33CR6
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT DC RETURN PATH FOR POWER CONTACTOR MOTOR. SECOND FAILURE WOULD CAUSE AN INABILITY TO CHANGE THE POWER CONTACTOR SUPPLYING THE P/L BAY POWER. LOSS OF ALL CONTROL OF P/L BAY MAY CAUSE LOSS OF CREW/VEHICLE IF PAYLOAD BAY POWER IS REQUIRED OFF.

REFERENCES: 76U5C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5334 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (F/C 3 TO PAYLOAD)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #3 OUTPUT
- 2) MAIN DC DIST ASSY #3
- 3) SWITCH, MOTORIZED (F/C 3 TO PAYLOAD)
- 4) 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33S3

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK,

CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT POWER PATH TO PAYLOAD. LOSS OF ALL REDUNDANT POWER TO PAYLOAD WOULD LIKELY CAUSE LOSS OF MISSION. NO EFFECT ON CREW OR VEHICLE.

REFERENCES: 76U7C

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5335 SWITCH, MOTORIZED (F/C 3 TO PAYLOAD) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #3 OUTPUT MAIN DC DIST ASSY #3 SWITCH, MOTORIZED (F/C 3 TO PAYLOAD) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3

3/3 TAL: 3/3

LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION:

40V76A33S3

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK,

CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS SWITCH IS NORMALLY CLOSED FOR FLIGHT OPERATION.

REFERENCES: 76U7C

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

MDAC ID: 5336

FLIGHT: 2/1R ABORT:

2/1R

ITEM: SWITCH, MOTORIZED (F/C 3 STRUCTURE RETURN)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

1) FUEL CELL #3 OUTPUT RETURN

MAIN DC DIST ASSY #3

3) SWITCH, MOTORIZED (F/C 3 STRUCTURE RETURN)

5)

6)

7)

8) 05-6

CRITICALITIES

夏·夏萨尔萨克斯尔 (1)

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R | |
| LIFTOFF: | 2/1R | TAL: | 2/1R | |
| ONORBIT: | 3/1R | AOA: | 2/1R | |
| DEORBIT: | 3/1R | ATO: | 2/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33S4

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK,

CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:

FAILURE OF THIS SWITCH TO POWER THE CONTACTOR AFTER THE DC RETURN PATH HAS BEEN INTERRUPTED WOULD MEAN THAT MAIN DC BUS C LOADS WOULD BE LOST. BUS TIE COULD BE PERFORMED. LOSS OF ALL REDUNDANT POWER TO BUS C LOADS MAY CAUSE LOSS OF CREW/VEHICLE. A SECOND FAILURE IN THE BUS TIE CIRCUIT WOULD CAUSE LOSS OF POWER TO MPS AND FORWARD RCS VALVES WHICH COULD CAUSE LOSS OF CREW/VEHICLE DUE TO AN EXPLOSIVE GAS MIXTURE IN THE AFT COMPARTMENT OR LACK OF CG CONTROL DURING ENTRY.

REFERENCES: 76U5B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5337 ABORT: 2/1R

ITEM: SWITCH, MOTORIZED (F/C 3 STRUCTURE RETURN)

FAILURE MODE: INADVERTENT TRANSFERS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #3 OUTPUT RETURN
- 2) MAIN DC DIST ASSY #3
- 3) SWITCH, MOTORIZED (F/C 3 STRUCTURE RETURN)

4)

5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 3/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

40V76A33S4

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK,

CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF THE MAIN DC BUS C RETURN PATH AND THE CONNECTED MAIN DC BUS C LOADS. BUS TIE COULD BE PERFORMED. LOSS OF ALL POWER TO MAIN DC BUS C LOADS COULD CAUSE LOSS OF CREW/VEHICLE.

A SECOND FAILURE IN THE BUS TIE CIRCUIT WOULD CAUSE LOSS OF POWER TO MPS AND FORWARD RCS VALVES WHICH COULD CAUSE LOSS OF CREW/VEHICLE DUE TO AN EXPLOSIVE GAS MIXTURE IN THE AFT COMPARTMENT OR LACK OF CG CONTROL DURING ENTRY.

REFERENCES: 76U5B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/2R

ABORT: 3/3 MDAC ID: 5338

SWITCH, MOTORIZED (MAIN DC BUS C TO PAYLOAD) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS C
- MAIN DC BUS C
 MAIN DC DIST ASSY #3
- SWITCH, MOTORIZED (MAIN DC BUS C TO PAYLOAD)

4)

5) 6)

7)

8) 05-6 9)

CRITICALITIES

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| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/2R | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/2R | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | • | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33S5

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK,

CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT POWER PATH TO PAYLOAD. LOSS OF ALL REDUNDANT POWER TO PAYLOAD WOULD LIKELY CAUSE LOSS OF MISSION. NO EFFECT ON CREW OR VEHICLE.

REFERENCES: 76U7E

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5339 SWITCH, MOTORIZED (MAIN DC BUS C TO PAYLOAD) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C MAIN DC DIST ASSY #3 2) SWITCH, MOTORIZED (MAIN DC BUS C TO PAYLOAD) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF:

3/3 3/3 TAL:

3/3 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT:

LANDING/SAFING: 3/3

C [B [] REDUNDANCY SCREENS: A []

LOCATION:

40V76A33S5

PART NUMBER: MC455-0126-0001

CAUSES: PIECE PART STRUCTURAL FAILURE, MECH SHOCK,

CONTAMINATION, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS SWITCH IS NORMALLY CLOSED FOR FLIGHT OPERATION.

REFERENCES: 76U7E

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5340 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|--|---|
| ITEM: RPC, 7.5A (GSE MAIN FAILURE MODE: FAILS OPEN | C OFF) |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) APCA - 6 4) RPC, 7.5A (GSE MAIN C OFF) 5) 6) 7) | |
| 8) 9) 05-6 | · + |
| CRITICA | TTTTES |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| REDUNDANCY SCREENS: A [] | B[] C[] |
| LOCATION: 56V76A136RPC1 PART NUMBER: MC450-0017-1075 | |
| CAUSES: PIECE PART STRUCTURAL FAIR SHOCK, THERMAL STRESS, VIBRATION | LURE, CONTAMINATION, MECH |
| EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ON FLIGHT OPERATIONS. | NLY AND IS NOT CRITICAL FOR |
| REFERENCES: 76Y24F | · ¬ → |

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5341 RPC, 7.5A (GSE MAIN C OFF) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) APCA - 6 RPC, 7.5A (GSE MAIN C OFF) 4) 5) 6) 7)

CRITICALITIES

| A1/T T T A1/ | O1/T T T O1/D T T T T D | | |
|--------------|--------------------------------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 3/3 | |
| 3/3 | TAL: | 3/3 | |
| 3/3 | AOA: | 3/3 | |
| 3/3 | ATO: | 3/3 | |
| : 3/3 | | • | |
| | HDW/FUNC 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136RPC1 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

8) 9)

05-6

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76Y24F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5342 ITEM: RPC, 7.5A (GSE MAIN C ON) Fig. 7 FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) APCA - 6 4) RPC, 7.5A (GSE MAIN C ON) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 56V76A136RPC2 PART NUMBER: MC450-0017-1075 and the second of the second o CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS. REFERENCES: 76Y23F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5343 RPC, 7.5A (GSE MAIN C ON) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #2 2) 3) APCA - 6 RPC, 7.5A (GSE MAIN C ON) 5) 6) 7)

CRITICALITIES

| | O1/T T T O11D T T T D D | | |
|-----------------|-------------------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136RPC2 PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

8) 9)

05-6

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76Y23F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5344 ITEM: SWITCH, MOTORIZED (GSE PWR CONTROL) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 2) PRE-FLT TEST BUS #2 3) APCA - 6 4) SWITCH, MOTORIZED (GSE PWR CONTROL) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3

3/3 ATO: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 56V76A136S1 PART NUMBER: MC455-0126-0001 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, THERMAL STRESS, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS. REFERENCES: 76Y23D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5345 ABORT: 3/3

ITEM: SWITCH, MOTORIZED (GSE PWR CONTROL)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) APCA 6
- 4) SWITCH, MOTORIZED (GSE PWR CONTROL)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| ONTITUD | | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136S1
PART NUMBER: MC455-0126-0001

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, THERMAL STRESS, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76Y23D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5346 ABORT: 2/1R

ITEM: FUSE, 200A TO MAIN DC DIST ASSY 3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) APCA-6
- 3) FUSE, 200A TO MAIN DC DIST ASSY 3

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 2/1R | TAL: | 2/1R | |
| ONORBIT: | 3/1R | AOA: | 2/1R | |
| DEORBIT: | 3/1R | ATO: | 2/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 56V76A136F1

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. A SECOND FAILURE IN THE OTHER PATH WOULD CAUSE LOSS OF POWER TO MPS VALVE SOLENOIDS. IF CERTAIN VALVES ARE NOT CLOSED AT ET SEP, THE ET COULD RECONTACT THE VEHICLE CAUSING TPS DAMAGE AND OR CREW/VEHICLE LOSS.

REFERENCES: 76Y22C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5347 ABORT: 2/1R

ITEM: FUSE, 200A TO MAIN DC DIST ASSY 3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) APCA-6
- 3) FUSE, 200A TO MAIN DC DIST ASSY 3

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| | | 7010000000000 | |
|-----------------|----------|---------------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 3/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 56V76A136F2

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. A SECOND FAILURE IN THE OTHER PATH WOULD CAUSE LOSS OF POWER TO MPS VALVE SOLENOIDS. IF CERTAIN VALVES ARE NOT CLOSED AT ET SEP, THE ET COULD RECONTACT THE VEHICLE CAUSING TPS DAMAGE AND OR CREW/VEHICLE LOSS.

REFERENCES: 76Y22C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5348 FUSE, 3A TO GSE MONITOR ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #2 2) 3) APCA - 6 4) FUSE, 3A TO GSE MONITOR 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136F17
PART NUMBER: MC451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT OPERATIONS.

REFERENCES: 76Y22F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5349 ABORT: 3/3

ITEM: RESISTOR, 1.2K (TO GSE PWR CONT)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) APCA 6
- 4) RESISTOR, 1.2K (TO GSE PWR CONT)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|---|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136A1R55
PART NUMBER: RLR42C122GM

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATION.

REFERENCES: 76Y22D

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5350 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 | | | |
|--|--|--|--|--|
| ITEM: RESISTOR, 5.1K 1/4W FAILURE MODE: FAILS OPEN | (TO GSE MONITOR) | | | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER | | | |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 4) 5) 6) 7) | | | | |
| 8) 9) 05-6 | | | | |
| CRITICAL | TOTES | | | |
| FLIGHT PHASE HDW/FUNC | ABORT HDW/FUNC | | | |
| PRELAUNCH: 3/3 | RTLS: 3/3 | | | |
| LIFTOFF: 3/3 | TAL: 3/3 | | | |
| ONORBIT: 3/3 | AOA: 3/3 | | | |
| DEORBIT: 3/3 | ATO: 3/3 | | | |
| LANDING/SAFING: 3/3 | 7 , 5, 5 | | | |
| REDUNDANCY SCREENS: A [] | в[] с[] | | | |
| LOCATION: 40V76A33R2 | | | | |
| PART NUMBER: RLR07C512GR | English and the state of the st | | | |
| | | | | |
| CAUSES: CONTAMINATION, THERMAL STR | ESS, VIBRATION, MECH SHOCK | | | |
| EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL FO | R FLIGHT OPERATIONS. | | | |

REFERENCES: 76Y20D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5351 RESISTOR, 5.1K 1/4W (TO GSE MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS C 1) MAIN DC DIST ASSY #3 2) RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 3) 4) 5) 6) 7) 8)

CRITICALITIES

| | CATITOALITIES | | |
|-----------------|---------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33R3
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

9)

05-6

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76Y19C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: FLIGHT: 3/3 EPD&C ABORT: 3/3 MDAC ID: 5352 ITEM: RESISTOR, 5.1K 1/4W (TO MDM OF3) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) RESISTOR, 5.1K 1/4W (TO MDM OF3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 3/3 ONORBIT: AOA: ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33R8 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76Y16C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5353 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W (TO MDM OF3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RESISTOR, 5.1K 1/4W (TO MDM OF3)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| ~************************************* | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33R10 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76Y13C

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5354 | FLIGHT: 3/3 ABORT: 3/3 |
|--|--|
| ITEM: RESISTOR, 1.2K 2W FAILURE MODE: FAILS OPEN | to green and the second se |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) ESS BUS 3AB 4) RESISTOR, 1.2K 2W 5) 6) 7) 8) | en e |
| 9) 05-6 | |
| CRITICALI FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| REDUNDANCY SCREENS: A [] B | |
| LOCATION: 40V76A33R9 PART NUMBER: RLR42C122GR | |
| CAUSES: CONTAMINATION, THERMAL STRE | SS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS ITEM SUPPLIES NON-CRITICAL MEAS | SUREMENT CIRCUITS. |

REFERENCES: 76Y16B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5355 ABORT: 3/3

ITEM:

RESISTOR, 2K 1/4W (TO C&W)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RESISTOR, 2K 1/4W (TO C&W)
- 4)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| C1/T T T C11/1/T T T T T T T T T T T T T T T T T T | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33R6
PART NUMBER: RBR54L20000AR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76Y9B

| DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5356 ABORT: 3/3 |
|--|
| ITEM: RESISTOR, 14K 1/4W (TO C&W) FAILURE MODE: FAILS OPEN |
| LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) RESISTOR, 14K 1/4W (TO C&W) 4) 5) 6) 7) |
| 8) 9) 05-6 |
| CRITICALITIES |
| |
| FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC |
| PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 |
| LIFTOFF: 3/3 TAL: 3/3 |
| LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 |
| DEORBIT: 3/3 ATO: 3/3 |
| LANDING/SAFING: 3/3 |
| REDUNDANCY SCREENS: A [] B [] C [] |
| LOCATION: 40V76A33R7 |
| PART NUMBER: RBR54L14001AR Quantum Company Com |
| PART NUMBER: REPORTED THE PROPERTY OF THE PROP |
| CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL TO FLIGHT OPERATIONS. |
| REFERENCES: 76Y8B |

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5357 ABORT: 2/1R

ITEM: SHUNT, DC AMMETER (TO F/C 3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) SHUNT, DC AMMETER (TO F/C 3)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 3/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33R11 PART NUMBER: MSB-501

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF POWER FROM FUEL CELL #3. LOSS OF ALL REDUNDANCY WOULD RESULT IN LOSS OF CREW/VEHICLE DUE TO LOSS OF ALL POWER.

A SECOND FAILURE IN THE BUS TIE CIRCUIT WOULD CAUSE LOSS OF POWER TO MPS AND FORWARD RCS VALVES WHICH COULD CAUSE LOSS OF CREW/VEHICLE DUE TO AN EXPLOSIVE GAS MIXTURE IN THE AFT COMPARTMENT OR LACK OF CG CONTROL DURING ENTRY.

REFERENCES: 76Y3B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5358 ABORT: 2/1R

FUSE, 200A TO APCA-6 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- MAIN DC DIST ASSY #3
- 3) FUSE, 200A TO APCA-6
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 2/1R | TAL: | 2/1R | |
| ONORBIT: | 3/1R | AOA: | 2/1R | |
| DEORBIT: | 3/1R | ATO: | 2/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 40V76A33F14

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. A SECOND FAILURE IN THE OTHER PATH WOULD CAUSE LOSS OF POWER TO MPS VALVE SOLENOIDS. IF CERTAIN VALVES ARE NOT CLOSED AT ET SEP, THE ET COULD RECONTACT THE VEHICLE CAUSING TPS DAMAGE AND OR CREW/VEHICLE LOSS.

REFERENCES: 76Y19C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5359 ABORT: 2/1R

ITEM: FUSE, 200A TO APCA-6

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 200A TO APCA-6
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 3/1R | ATO: | 2/1R |
| LANDING/SAFING | : 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 40V76A33F15

PART NUMBER: ME451-0016-2150(?-2200)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER PATH TO THE APCA. A SECOND FAILURE IN THE OTHER PATH WOULD CAUSE LOSS OF POWER TO MPS VALVE SOLENOIDS. IF CERTAIN VALVES ARE NOT CLOSED AT ET SEP, THE ET COULD RECONTACT THE VEHICLE CAUSING TPS DAMAGE AND OR CREW/VEHICLE LOSS.

REFERENCES: 76Y19C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5360 ABORT: FUSE, 5A TO MPCA-3, FPCA-3, APCA-6 ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) CURRENT SENSOR EXCITATION #3,6,9 4) FUSE, 5A TO MPCA-3, FPCA-3, APCA-6 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: TAL: PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 3/3 DEORBIT: ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [LOCATION: 40V76A33F13 PART NUMBER: ME451-0009-1021 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS IS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76Y19B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5361 ABORT: 3/1R

ITEM: FUSE, 200A TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 200A TO DC TIE BUS
- 4)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | ~ | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F27
PART NUMBER: ME451-0016-2200

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76Y16C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5362 ABORT: 3/1R

ITEM: FUSE, 200A_TO DC TIE BUS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 200A TO DC TIE BUS

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | <u>*</u> | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F28

PART NUMBER: ME451-0016-2200

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF A REDUNDANT PATH TO ALLOW BUS TIE OF THE MAIN DC BUSSES. LOSS OF ALL PATHS COULD CAUSE LOSS OF CREW/VEHICLE IF A BUS TIE WERE REQUIRED.

REFERENCES: 76Y16C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5363 ABORT: 3/3

FUSE, 10A (NO LOAD CONNECTED) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 10A (NO LOAD CONNECTED)
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | 4 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33F36 PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

NO EFFECT AS THIS FUSE HAS NO LOADS CONNECTED TO IT.

REFERENCES: 76Y15C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R MDAC ID: 5364 ABORT: FUSE, 20A TO ESS BUS 3AB ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) FUSE, 20A TO ESS BUS 3AB 4) 5) 6) 7) 8) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: TAL: 3/1R 3/3 PRELAUNCH: 3/1R LIFTOFF: 3/1R AOA: ONORBIT: 3/1R 3/1R 3/1R ATO: DEORBIT: 3/1R LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [2] B [F] C [P] LOCATION: 40V76A33F31 The state of the second PART NUMBER: ME451-0009-5200 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO THE ESS

REFERENCES: 76Y12C

BUS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF ALL POWER TO ORBITER ESSENTIAL LOADS RESULTING IN LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5365 ABORT: 3/3

ITEM: FUSE, 3A TO DC VOLTMETER

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 3A TO DC VOLTMETER
- 4)
- 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | O1/T T T O1: | | |
|-----------------|--------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33F32
PART NUMBER: ME451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW.

REFERENCES: 76Y12C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C MDAC ID: ABORT: 3/3 5366 FUSE, 3A TO DC VOLTMETER ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) FUSE, 3A TO DC VOLTMETER 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 FLIGHT PHASE 3/3 PRELAUNCH: LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33F33 PART NUMBER: ME451-0009-1003 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW.

REFERENCES: 76Y10B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5367 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 5A THERMAL (MAIN C CONTR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) 013 PANEL
- 3) ESS BUS 3AB
- 4) CIRCUIT BREAKER, 5A THERMAL (MAIN C CONTR)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|-----------------|---|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | - | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 33V73A13CB16
PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO PATHS TO CONTROL THE FUEL CELL TO MAIN DC BUS CONNECTION AND THE DC BUS TO BUS TIE CONNECTION. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF ALL POWER TO ORBITER SYSTEMS.

REFERENCES: 76Y20H

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5368 ITEM: CIRCUIT BREAKER, 5A THERMAL (MAIN C CONTR) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) 013 PANEL 3) ESS BUS 3AB 4) CIRCUIT BREAKER, 5A THERMAL (MAIN C CONTR) 6) 7) 8) 05-6 9)

CRITICALITIES

| | | V-12-1-V-12-1-V | |
|---------------|----------|-----------------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFIN | NG: 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A13CB16
PART NUMBER: MC454-0026-2050

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF CIRCUIT PROTECTION. IN AN OVERLOAD CONDITION, MULTIPLE ORDER FAILURE, THE OVERLOAD CAN BE CORRECTED BY VARYING THE LOADING OF THE MAIN DC BUSSES THROUGH BUS TIES AND OTHER CIRCUIT BREAKERS.

REFERENCES: 76Y20H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5369 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPDT (MAIN BUS TIE C)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #3
- 4) SWITCH, TOGGLE SPDT (MAIN BUS TIE C)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|----------------------|--|--|
| 3/3 | RTLS: | 3/1R | |
| 2/1R | TAL: | 2/1R | |
| 3/1R | AOA: | 2/1R | |
| 3/1R | ATO: | 2/1R | |
| 3/3 | | · | |
| | 2/1R 3/1R 3/1R | 3/3 RTLS: 2/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S15
PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

IF A BUS TIE WERE REQUIRED, THIS FAILURE MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL MPS VALVES.

REFERENCES: 76Y17H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5370 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPDT (MAIN BUS TIE C)

FAILURE MODE: INADVERTENT TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #3
- 4) SWITCH, TOGGLE SPDT (MAIN BUS TIE C)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 3/1R | AOA: | 2/1R |
| DEORBIT: | 3/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S15

PART NUMBER: ME452-0102-7105

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

IF A BUS TIE WERE REQUIRED, THIS FAILURE MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL MPS VALVES.

REFERENCES: 76Y17H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5371 ABORT: 3/1R

ITEM: SWITCH, TOGGLE DPDT (FC/MN BUS C)

FAILURE MODE: FAILURE TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) R1A1 PANEL
- 3) MAIN DC DIST ASSY #3
- 4) SWITCH, TOGGLE DPDT (FC/MN BUS C)

5)

6)

7)

8)

9) 05-6

CRITICALITIES

| CIVITACU | TITIU . | |
|----------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | | · |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73AlAlS12 PART NUMBER: ME452-0102-7355

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF CREW/VEHICLE IF FUEL CELL COULD NOT BE CONNECTED TO MAIN DC BUS AFTER A FUEL CELL RESTART.

REFERENCES: 76Y14H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5372 ABORT: 3/1R

ITEM: SWITCH, TOGGLE DPDT (FC/MN BUS C)

FAILURE MODE: INADVERTENTLY TRANSFERS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #3
- 4) SWITCH, TOGGLE DPDT (FC/MN BUS C)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S12 PART NUMBER: ME452-0102-7355

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

POSSIBLE LOSS OF CREW/VEHICLE IF FUEL CELL WAS INADVERTENTLY DISCONNECTED FROM MAIN DC BUS.

REFERENCES: 76Y14H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5373 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD AFT MN C)

FAILURE MODE: FAILS TO TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) RIAL PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD AFT MN C)
- 4) 5)
- 5) 6\
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | 01/1110111111 | | | |
|-----------------|---------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | : 3/3 | | · | |
| | | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S31
PART NUMBER: ME452-0102-7101

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE AFT PAYLOAD BUS. LOSS OF ALL POWER MAY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO PAYLOADS.

REFERENCES: 76Y12H

HIGHEST CRITICALITY HDW/FUNC 3/11/87

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5374 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPDT (PAYLOAD AFT MN C)

FAILURE MODE: INADVERTENT TRANSFER

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) RIAL PANEL
- 3) SWITCH, TOGGLE SPDT (PAYLOAD AFT MN C)

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S31

PART NUMBER: ME452-0102-7101

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE AFT PAYLOAD BUS. LOSS OF ALL POWER MAY CAUSE LOSS OF MISSION DUE TO LOSS OF POWER TO PAYLOADS.

REFERENCES: 76Y12H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

SUBSYSTEM: EPD&C FLIGHT: 3/2R ABORT: 3/3 MDAC ID: 5375

RELAY (TO AFT PAYLOAD BUS) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- MAIN DC DIST ASSY #3 2)
- 3) APCA-6
- APCA-3 4)
- 5) RELAY (TO AFT PAYLOAD BUS)

6) 7)

8)

9) 05-6

CRITICALITIES

| | V-1 | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/2R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 56V76A133K1 PART NUMBER: MC455-0134-0001

CAUSES: MECH SHOCK, PIECE PART STRUCTURAL FAILURE, VIBRATION, CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES OF POWER TO THE AFT PAYLOAD. WORST CASE EFFECT IS LOSS OF MISSION DUE TO INABILITY TO SUPPLY POWER TO PAYLOADS.

REFERENCES: 76Y8H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5376 ABORT: 3/3 RELAY (TO AFT PAYLOAD BUS) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS C 1) MAIN DC DIST ASSY #3 APCA-6 3) APCA-3 4) RELAY (TO AFT PAYLOAD BUS) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: LIFTOFF: 3/3

3/3

3/3

AOA:

ATO:

REDUNDANCY SCREENS: A [] B [] C []

3/3

3/3

LOCATION: 56V76A133K1

ONORBIT: DEORBIT:

PART NUMBER: MC455-0134-0001

LANDING/SAFING: 3/3

CAUSES: MECH SHOCK, PIECE PART STRUCTURAL FAILURE, VIBRATION, CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76Y8H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R MDAC ID: 5377 ABORT: 3/3

ITEM: FUSE, 80A TO AFT P/L MN C

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) APCA-3
- 5) FUSE, 80A TO AFT P/L MN C
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | 01/2 2 4 01.11 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | | |
|-----------------|--|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/2R | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | - | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 56V76A133F13
PART NUMBER: ME451-0016-0080

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

POSSIBLE LOSS OF MISSION DUE TO LOSS OF POWER TO AFT PAYLOAD AFTER TWO FAILURES.

REFERENCES: 76Y9G

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5378 | HIGHEST | CRITICALITY FLIGHT: ABORT: | HDW/FUNC 3/3 3/3 |
|---|--|---|------------------------|
| ITEM: RESISTOR, 5.1K FAILURE MODE: FAILS OPEN | 44 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | • • • |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS L | EAD: K. SCHMI | ECKPEPER |
| BREAKDOWN HIERARCHY: 1) ESS BUS 3AB 2) APCA-3 3) RESISTOR, 5.1K 4) | | | - 1- - 1- - 1 |
| 5) 6) 7) 8) 9) 05-6 | · · · | teken er en jeden er en | |
| CRITICAL | TMTRO | | |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT RTL: TAL: AOA: ATO: | S: 3/3 : 3/3 : 3/3 | Ċ |
| REDUNDANCY SCREENS: A [] | B [] | <u>c</u> [| |
| LOCATION: 56V76A133A2R5 PART NUMBER: RLR07C5101GR | | | |
| CAUSES: CONTAMINATION, THERMAL STR | ESS, VIBR | ATION, MECH S | ЭНОСК |
| EFFECTS/RATIONALE: THIS FAILURE EFFECTS A NON-CRITICAL EFFECT ON CREW/MISSION/VEHICLE. | MEASUREM | ENT CIRCUIT. | NO |

REFERENCES: 76Y9G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5379 ABORT: 3/3

ITEM: RPC, 7.5A (DC TIE BUS MAIN C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 3
- 4) RPC, 7.5A (DC TIE BUS MAIN C)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|--------------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | | · |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27RPC3
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76Y17E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: MDAC ID: 5380 3/3 ITEM: RPC, 7.5A (DC TIE BUS MAIN C) FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 3 4) RPC, 7.5A (DC TIE BUS MAIN C) 5) 6) 7) 8) 91 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27RPC3 PART NUMBER: MC450-0017-1075 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76Y17E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5381 ABORT: 3/3

ITEM: RPC, 7.5A (DC TIE BUS MAIN C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 3
- 4) RPC, 7.5A (DC TIE BUS MAIN C)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • " | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27RPC4
PART NUMBER: MC450-0017-1075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76Y18E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5382 RPC, 7.5A (DC TIE BUS MAIN C) ITEM: FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 3 4) RPC, 7.5A (DC TIE BUS MAIN C) 5) 6) 7) 8) 05-6 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27RPC4 PART NUMBER: MC450-0017-1075 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76Y18E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5383 ABORT: 3/3

ITEM: RPC, 7.5A (MAIN DC BUS C F/C PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 3
- 4) RPC, 7.5A (MAIN DC BUS C F/C PWR)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27RPC5
PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76Y14E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5384 ABORT: 3/3 ITEM: RPC, 7.5A (MAIN DC BUS C F/C PWR) FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 3 4) RPC, 7.5A (MAIN DC BUS C F/C PWR) 6) 7) 8) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27RPC5 The second secon PART NUMBER: MC450-0017-2075 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN

REFERENCES: 76Y14E

USED ONLY ON THE GROUND.

DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5385 ABORT: 3/3

ITEM: RPC, 7.5A (MAIN DC BUS C F/C PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 3
- 4) RPC, 7.5A (MAIN DC BUS C F/C PWR)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

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|-----------------|------------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27RPC6
PART NUMBER: MC450-0017-2075

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF CONTROL OF A POWER CONTACTER USED TO CONNECT DC POWER TO THE MAIN DC BUS. THE WORST CASE EFFECT IS LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76Y15E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5386 RPC, 7.5A (MAIN DC BUS C F/C PWR) ITEM: FAILURE MODE: INADVERTENT OPERATION LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLT TEST BUS #2 2) 3) MPCA - 3 4) RPC, 7.5A (MAIN DC BUS C F/C PWR) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: LIFTOFF: 3/3

AOA:

ATO:

3/3

3/3

REDUNDANCY SCREENS: A [] B [] C []

3/3

3/3

LOCATION: 40V76A27RPC6
PART NUMBER: MC450-0017-2075

LANDING/SAFING: 3/3

ONORBIT:

DEORBIT:

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CONNECT/DISCONNECT MAIN DC POWER FROM THE MAIN DC BUS. THE WORST CASE EFFECT IS A LAUNCH DELAY AS THIS RPC IS USED ONLY ON THE GROUND.

REFERENCES: 76Y15E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5387 ABORT:

ITEM:

DIODE, ISOLATION 35A

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 3
- 4) DC TIE BUS MAIN C
- DIODE, ISOLATION 35A 5)
- 6)
- 7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A2CR1 PART NUMBER: JANTXIN1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76Y17E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5388 ABORT: 3/3 ITEM: DIODE, ISOLATION 35A FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 3 4) DC TIE BUS MAIN C 5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27A2CR1 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5389 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 3
- 4) DC TIE BUS MAIN C
- 5) DIODE, ISOLATION 35A

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A2CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76Y18E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C MDAC ID: 5390 ABORT: 3/3 ITEM: DIODE, ISOLATION 35A FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 3 4) DC TIE BUS MAIN C

7) 8) 9) 05-6

6)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A2CR2
PART NUMBER: JANTX1N1188R

5) DIODE, ISOLATION 35A

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76Y18E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

SUBSYSTEM: EPD&C 3/3 FLIGHT: ABORT: 3/3 MDAC ID: 5391

DIODE, ISOLATION 35A ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- PRE-FLT TEST BUS #2 2)
- 3) MPCA 3
- MAIN DC BUS C F/C PWR 4)
- DIODE, ISOLATION 35A 5)

6)

7)

8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|--------------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | | • |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A2CR3 PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO

FLIGHT OPERATIONS.

REFERENCES: 76Y14E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: MDAC ID: ABORT: 3/3 5392 DIODE, ISOLATION 35A ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) MPCA - 3 4) MAIN DC BUS C F/C PWR 5) DIODE, ISOLATION 35A 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: 3/3 LIFTOFF: AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27A2CR3 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5393

DIODE, ISOLATION 35A ITEM:

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLT TEST BUS #2
- 3) MPCA 3
- 4) MAIN DC BUS C F/C PWR
- 5) DIODE, ISOLATION 35A
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A2CR4 PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76Y15E

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5394 ABORT: 3/3 DIODE, ISOLATION 35A ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 MPCA - 3 4) MAIN DC BUS C F/C PWR 5) DIODE, ISOLATION 35A 6) 7) 8) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: 3/3 AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27A2CR4 PART NUMBER: JANTXIN1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76Y15E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5395 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) CBS FOR MDMS, SIG CONDS, GN&C, ARS, LIGHTS
- 5) FUSE, 35A
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33F19
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AA24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5396 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) CBS FOR MDMS, SIG CONDS, GN&C, ARS, LIGHTS
- 5) FUSE, 35A

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33F20

PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AA23H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5397 ABORT: 3/3

ITEM: FUSE, 5A TO RJDA

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) FUSE, 5A TO RJDA
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | 71/4 1 ± 71111 1 ± 110 | | |
|-----------------|------------------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33F37
PART NUMBER: ME451-0009-5050

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF POWER TO ONE FORWARD DRIVER LATCHING RELAY. SINCE THE RELAY IS LATCHED ON DURING PRELAUNCH THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE.

REFERENCES: 76AA23H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/2R

MDAC ID: 5398

ABORT: 3/3

ITEM: FUSE, 15A TO A14 PANEL (RCS/OMS HTRS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 15A TO A14 PANEL (RCS/OMS HTRS)

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|----------------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/2R | TAL: | 3/3 |
| 3/2R | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | · |
| | 3/3 3/2R 3/2R 3/3 | 3/3 RTLS: 3/2R TAL: 3/2R AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [1] B [P] C [P]

1 4 7 4 4 7 5 6

LOCATION: 40V76A33F22

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS A REDUNDANT POWER SOURCE TO THE FORWARD RCS HEATERS WHICH WOULD HAVE LITTLE EFFECT ON ASCENT AND NONE ON ENTRY. POSSIBLE LOSS OF MISSION COULD RESULT ON ORBIT DEPENDING ON OPERATIONS REQUIRED.

REFERENCES: 76AA22H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5399 ABORT: 3/1R

ITEM: FUSE, 5A TO RESISTORS TO CONT BUS MAIN C, ESS

BUSSES 1BC & 2CA

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) Rlal PANEL
- 4) FUSE, 5A TO RESISTORS TO CONT BUS MAIN C, ESS BUSSES 1BC & 2CA
 - 5)
 - 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F26
PART NUMBER: ME451-0009-5050

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE OF POWER TO THREE CONTROL BUSSES AND TWO ESSENTIAL BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AA21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5400 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

 $p_{i}(x) = \frac{1}{2\pi} \left(1 + \frac{1}{2} \left(\frac{1}$

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) NO CONNECTION ON
- 4) DWG #76AA
- 5) FUSE, 35A

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R 🕾 |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:

40V76A33F17

and the second s

PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AA21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5401 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) R15 PANEL
- 4) CBS FOR TV, RADIO, LIGHTS, CONT BUS AB1, AB2, AB3
- 5) FUSE, 35A
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | C1/111C1 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33F18
PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AA21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5402 ABORT: 3/1R

ITEM: FUSE, 35A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) ML86B PANEL
- 4) CBS FOR LIGHTS, WASTE, EMU, RMS, PYRO JETT

5) FUSE, 35A

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33F21

PART NUMBER: ME451-0016-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF THREE SOURCES TO MAIN DC SUB-BUSSES IN FLIGHT DECK PANELS. OTHER PANELS WILL STILL BE ABLE TO CONTROL FLIGHT CRITICAL FUNCTIONS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AA20H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5403 ABORT: 3/3

ITEM: CIRCUIT BREAKER, 10A (MN C UTIL PWR All/Al5/M030F)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) CIRCUIT BREAKER, 10A (MN C UTIL PWR All/Al5/M030F)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | CKITICHDITID | | |
|-----------------|--------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 33V73A16CB9
PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FAILURE WOULD CAUSE LOSS OF OVERLOAD PROTECTION AT DC UTILITY OUTLETS, WHICH ARE NON-CRITICAL TO FLIGHT OPERATIONS.

REFERENCES: 76AA23A

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 EPD&C SUBSYSTEM: FLIGHT: 3/3 MDAC ID: 5404 ABORT: 3/3 CIRCUIT BREAKER, 10A (MN C UTIL PWR All/Al5/M030F) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C MAIN DC DIST ASSY #3 3) 016 PANEL 4) CIRCUIT BREAKER, 10A (MN C UTIL PWR All/Al5/M030F) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 3/3 AOA: ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 33V73A16CB9 PART NUMBER: MC454-0026-2100 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: FAILURE WOULD CAUSE LOSS OF POWER AT DC UTILITY OUTLETS, WHICH

REFERENCES: 76AA23A

ARE NON-CRITICAL TO FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5405

CIRCUIT BREAKER, 10A (CONT BUS AB1, AB2, AB3) ITEM:

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS C 1)
- MAIN DC DIST ASSY #3 2)
- 3) R15 PANEL
- CIRCUIT BREAKER, 10A (CONT BUS AB1, AB2, AB3) 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A15CB64 PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5406 ABORT: 3/1R

ITEM: CIRCUIT BREAKER, 10A (CONT BUS AB1, AB2, AB3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) R15 PANEL
- 4) CIRCUIT BREAKER, 10A (CONT BUS AB1, AB2, AB3)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A15CB64
PART NUMBER: MC454-0026-2100

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO THREE CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5407 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS AB1)

6)

7)

8)

9) 05-6

CRITICALITIES

| | 7-1-2-7-1 | | | |
|----------------|-----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING | : 3/3 | | · | |
| | | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A2CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

ONE FAILURE WOULD HAVE NO EFFECT AS THE CONTROL BUS HAS REDUNDANT POWER SUPPLIED THROUGH TWO RPC'S. LOSS OF ALL REDUNDANT POWER TO THE NINE CONTROL BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTION CONTROL.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5408 ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB1) FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) R15 PANEL R2 PANEL 4) DIODE, ISOLATION 12A (TO CONT BUS AB1) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A2CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF REVERSE CURRENT PROTECTION BETWEEN ONE TRIAD OF CONTROL BUSSES. CONTROL BUS CIRCUIT IS FURTHER PROTECTED BY 10 A CIRCUIT BREAKER. THE NET RESULT IS NO EFFECT.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5409 DIODE, ISOLATION 12A (TO CONT BUS AB2) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS C 1) MAIN DC DIST ASSY #3 3) R15 PANEL 4) R2 PANEL DIODE, ISOLATION 12A (TO CONT BUS AB2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

LOCATION: 32V73A2CR2 PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

REDUNDANCY SCREENS: A [] B [] C []

EFFECTS/RATIONALE:

LOSS OF REVERSE CURRENT PROTECTION BETWEEN ONE TRIAD OF CONTROL BUSSES. CONTROL BUS CIRCUIT IS FURTHER PROTECTED BY 10 A CIRCUIT BREAKER. THE NET RESULT IS NO EFFECT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5410 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS AB2)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCRÉENS: A [2] B [F] C [P]

LOCATION: 32V73A2CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

ONE FAILURE WOULD HAVE NO EFFECT AS THE CONTROL BUS HAS REDUNDANT POWER SUPPLIED THROUGH TWO RPC'S. LOSS OF ALL REDUNDANT POWER TO THE NINE CONTROL BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTION CONTROL.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5411 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) R15 PANEL
- 4) R2 PANEL
- 5) DIODE, ISOLATION 12A (TO CONT BUS AB3)

6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |
| | | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A2CR3
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

ONE FAILURE WOULD HAVE NO EFFECT AS THE CONTROL BUS HAS REDUNDANT POWER SUPPLIED THROUGH TWO RPC'S. LOSS OF ALL REDUNDANT POWER TO THE NINE CONTROL BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTION CONTROL.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5412 DIODE, ISOLATION 12A (TO CONT BUS AB3) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C MAIN DC DIST ASSY #3 3) R15 PANEL 4) R2 PANEL 5) DIODE, ISOLATION 12A (TO CONT BUS AB3) 6) 7) 8)

CRITICALITIES

| ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | |
|--|--------------------------------------|---|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | · |
| | HDW/FUNC 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A2CR3
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

05-6

9)

LOSS OF REVERSE CURRENT PROTECTION BETWEEN ONE TRIAD OF CONTROL BUSSES. CONTROL BUS CIRCUIT IS FURTHER PROTECTED BY 10 A CIRCUIT BREAKER. THE NET RESULT IS NO EFFECT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5413 ABORT: 3/3

ITEM: SWITCH, TOGGLE (DC UTIL PWR MN C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) AlSAl PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN C)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 36V73A15A1S2
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76AA3H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5414 ABORT: 3/3 ITEM: SWITCH, TOGGLE (DC UTIL PWR MN C) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) 016 PANEL 4) Al5Al PANEL SWITCH, TOGGLE (DC UTIL PWR MN C) 7) 8) 9) 05-6 FLIGHT PHASE CRITICALITIES HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3 PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 36V73A15A1S2 PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76AA3H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5415 ABORT: 3/3

ITEM: SWITCH, TOGGLE (DC UTIL PWR MN C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) 016 PANEL
- 4) MO3OF PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN C)

6)

7)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|--------------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | · |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 80V73A123S1
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE,

MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76AA3F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5416 ITEM: SWITCH, TOGGLE (DC UTIL PWR MN C) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) 016 PANEL 4) MO3OF PANEL 5) SWITCH, TOGGLE (DC UTIL PWR MN C) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 80V73A123S1 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK EFFECTS/RATIONALE: THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76AA3F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5417 SWITCH, TOGGLE (DC UTIL PWR MN C) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1)
- MAIN DC BUS C MAIN DC DIST ASSY #3 2)
- 016 PANEL 3)
- 4) Allal PANEL
- 5) SWITCH, TOGGLE (DC UTIL PWR MN C)

6)

7) 8)

05-6 9)

CRITICALITIES

| | ~ | | | |
|-----------------|----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION:

36V73A11A1S13 PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE,

MECH SHOCK

EFFECTS/RATIONALE:

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76AA3E

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5418 ITEM: SWITCH, TOGGLE (DC UTIL PWR MN C) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) 016 PANEL 4) Allal PANEL 5) SWITCH, TOGGLE (DC UTIL PWR MN C) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: TAL: 3/3 AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] LOCATION: 36V73A11A1S13 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, VIBRATION, PIECE-PART STRUCTURAL FAILURE, MECH SHOCK

REFERENCES: 76AA3E

EFFECTS/RATIONALE:

EFFECT ON CREW/MISSION/VEHICLE.

THIS SWITCH PROVIDES POWER TO A NON-CRITICAL UTILITY OUTLET. NO

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5419 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO FPCA-3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS CA3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO FPCA-3)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| Q1/2 2 2 Q1/2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | | |
|---|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A4R1 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76AC24H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: MDAC ID: 5420 SWITCH, TOGGLE SPST (MCA LOGIC MN C FWD 3) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) CONT BUS CA3 3) MA73C PANEL 4) SWITCH, TOGGLE SPST (MCA LOGIC MN C FWD 3) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: ONORBIT: 3/3 AOA: 3/3 3/3 3/3 ATO: DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 85V73A129S11 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AC24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5421 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN C FWD 3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) CONT BUS CA3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN C FWD 3)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | ~~\~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ | | |
|-----------------|--|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S11
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76AC24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5422 ABORT: 3/1R

ITEM: FUSE, 150A TO FPCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 150A TO FPCA-3
- 4)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | V1/2 - 2 V1/2 - V1/2 - 2 V1/2 | | |
|----------------------------|---|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: LANDING/SAFING | 3/1R : 3/3 | ATO: | 3/1R |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F11

PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76AC24G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5423 ABORT: 3/1R

ITEM: FUSE, 150A TO FPCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 150A TO FPCA-3
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | -ABORT | HDW/FUNC | |
|----------------|----------|--------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING | : 3/3 | | | |
| | | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F12
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT PATH FROM MAIN DC DIST ASSY TO FPCA. LOSS OF ALL PATHS TO FORWARD MAIN DC BUS MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF CRITICAL FUNCTIONS.

REFERENCES: 76AC24G

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5424 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 | | |
|---|---|--|--|
| ITEM: RESISTOR, 5.1K 1/4W (FAILURE MODE: FAILS OPEN | (TO GSE MONITOR) | | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER | | |
| BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) RESISTOR, 5.1K 1/4W (TO GSE MONITOR) 4) 5) 6) 7) 8) 9) 05-6 | | | |
| CRITICALI | ITIES | | |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 | ABORT HDW/FUNC | | |
| PRELAUNCH: 3/3 LIFTOFF: 3/3 | RTLS: 3/3 TAL: 3/3 AOA: 3/3 | | |
| ONORBIT: 3/3 | AOA: 3/3 | | |
| LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 | ATO: 3/3 | | |
| LANDING/SAFING: 3/3 | | | |
| REDUNDANCY SCREENS: A [] E | s[] c[] | | |
| LOCATION: 40V76A33R4 PART NUMBER: RLR07C512GR | | | |
| CAUSES: CONTAMINATION, THERMAL STRE | SS, VIBRATION, MECH SHOCK | | |
| EFFECTS/RATIONALE: THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS. | | | |
| 원보 기계 | , raditions | | |
| REFERENCES: 76AC24E | | | |

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5425 RPC, 5A (FMCA-3 PWR CONT) FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C MAIN DC DIST ASSY #3 2) FPCA-3 3) RPC, 5A (FMCA-3 PWR CONT) 4) 5) 6) 7) 8) 9) 05-6

CRITICALITIES

| CULTICADITIES | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 83V76A24RPC12 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AC21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5426 ABORT: 2/1R

ITEM: RPC, 5A (FMCA-3 PWR CONT)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) RPC, 5A (FMCA-3 PWR CONT)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24RPC12 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO LOADS ON THE MCA. SECOND FAILURE TO THESE LOADS MAY RESULT IN LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE FORWARD DOORS PRIOR TO ENTRY.

REFERENCES: 76AC21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5427 ABORT: 1/1

ITEM: FUSE, 35A TO FLCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) FUSE, 35A TO FLCA-3
- 5)
- 6)
- 7)8)
- 9) 05-6

CRITICALITIES

| | C1/T T T C1 | CIVIIICULIIIC | |
|-----------------|-------------|---------------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 1/1 |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24F4

PART NUMBER: ME451-0009-3035

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT POWER SOURCE TO LOADS CONNECTED TO THE PCA. LOSS OF ALL POWER TO THESE LOADS COULD CAUSE LOSS OF CREW/MISSION.

DURING AN RTLS, THIS FAILURE WILL CAUSE LOSS OF FORWARD RCS MANIFOLD ISOL VALVE 1 WHICH WILL RESULT IN A CG PROBLEM DUE TO REDUCED DUMP CAPABILITY. THIS MAY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AC10D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 MDAC ID: 5428 ABORT: RESISTOR, 5.1K ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 FPCA-3 3) 4) RESISTOR, 5.1K TO TEST POINTS 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A24A1R13 PART NUMBER: RLR07C512GR (?)

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED TO CHECK MAIN DC BUS C. THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS ALTERNATE MEANS ARE AVAILABLE TO THE CREW.

REFERENCES: 76AC10G

HDW/FUNC 3/11/87 HIGHEST CRITICALITY DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3

5429 ABORT: MDAC ID:

ITEM: RESISTOR, 1.8K 1/4W (TO SIG COND OF3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- RESISTOR, 1.8K 1/4W (TO SIG COND OF3) 4)
- 5) 6)
- 7)
- 8)
- 05-6 9)

CRITICALITIES

| V.12 - 0 - V.12 - V.12 - V.12 - V | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 83V76A24A1R73 PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AC8C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5430 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO MPCA-3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS CA3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO MPCA-3)
- 4) 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A4R2 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76AD24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5431 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO MPCA-3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS CA3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO MPCA-3)

4)

5)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/2R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A4R3

PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76AD24F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5432 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) CONT BUS CA3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 2)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S12
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76AD24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5433 ABORT: 3/3

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 2)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) CONT BUS CA3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 2)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 85V73A129S12
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AD24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5434 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 4)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) CONT BUS CA3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 4)

5) 6 \

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S13
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT DC POWER TO THE MCA. SECOND FAILURE COULD DISABLE THE MCA BUS ALTOGETHER. LOSS OF CREW/VEHICLE IS LIKELY DUE TO INABILITY TO CLOSE DOORS ON ENTRY AND THEREBY CAUSING DAMAGE TO VEHICLE.

REFERENCES: 76AD24F

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 5435 ABORT: MDAC ID: ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 4) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C CONT BUS CA3 3) MA73C PANEL SWITCH, TOGGLE SPST (MCA LOGIC MN C MID 4) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH:

3/3 RTLS: 3/3 TAL: 3/3 3/3

LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 3/3

LANDING/SAFING: 3/3

C [] REDUNDANCY SCREENS: A [] B []

LOCATION: 85V73A129S13 PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AD24F

DATE: 3/11/87 HIC

HIGHEST CRITICALITY HDW/FUNC

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SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5436 ABORT: 3/1R

ITEM: FUSE, 100A TO MPCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 100A TO MPCA-3
- 4) 5)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33F16

PART NUMBER: ME451-0016-2100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE SOURCES OF ESSENTIAL BUSS POWER ON TWO ESSENTIAL BUSSES. LOSS OF ALL POWER TO ESSENTIAL BUSSES COULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AD24D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5437 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W (TO GSE MONITOR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RESISTOR, 5.1K 1/4W (TO GSE MONITOR)
- 4)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| | V:\ | | | |
|-----------------|----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33R5
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AD24C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5438 ABORT: 3/1R

ITEM: FUSE, 35A TO H2/O2 HTR CONT ASSY #1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 35A TO H2/O2 HTR CONT ASSY #1
- 4) 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION:

40V76A33F23

PART NUMBER: ME451-0016-2035 (?3035)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/O2 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76AD22B

HIGHEST CRITICALITY HDW/FUNC 3/11/87

FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT: MDAC ID: 5439

FUSE, 35A TO H2/O2 HTR CONT ASSY #2 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- MAIN DC DIST ASSY #3
- FUSE, 35A TO H2/O2 HTR CONT ASSY #2
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | 41/2 I Z 41111 I I I I | | | |
|-----------------|------------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33F24

PART NUMBER: ME451-0016-2035 (?3035)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/O2 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76AD16B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5440 ABORT: 3/1R

ITEM: FUSE, 50A TO H2/O2 HTR CONT ASSY #4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 50A TO H2/O2 HTR CONT ASSY #4

4)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 40V76A33F25

PART NUMBER: ME451-0016-2050 (?3050)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANCY TO H2/O2 CONTROL BOX. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CRYO CONTROL AND ALL EPS CONTROL WHICH WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL HEATER LOADS.

REFERENCES: 76AD9B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5441 ABORT: 3/3

ITEM: RPC, 5A (TO MMCA-2)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) RPC, 5A (TO MMCA-2)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27RPC10
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AD21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5442 ABORT: 2/1R

ITEM: RPC, 5A (TO MMCA-2)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) RPC, 5A (TO MMCA-2)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/3 | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A27RPC10
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76AD21H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5443 RPC, 5A (TO MMCA-4) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) MPCA-3 RPC, 5A (TO MMCA-4) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 ONORBIT: AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27RPC11 PART NUMBER: MC450-0017-1050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: NO EFFECT ON CREW/MISSION/VEHICLE AS THIS IS NORMAL FLIGHT

REFERENCES: 76AD21F

CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5444 ABORT: 2/1R

ITEM: RPC, 5A (TO MMCA-4)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) RPC, 5A (TO MMCA-4)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R | |
| LIFTOFF: | 3/3 | TAL: | 2/1R | |
| ONORBIT: | 2/1R | AOA: | 2/1R | |
| DEORBIT: | 2/1R | ATO: | 2/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A27RPC11
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF TWO POWER PATHS TO MCA FUNCTIONS. SECOND FAILURE IN OTHER PATH MAY LEAD TO LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS DURING ENTRY.

REFERENCES: 76AD21F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5445 ABORT: 3/1R

ITEM: FUSE, 150A TO APCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) FUSE, 150A TO APCA-3
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| O1/4 + 4 V112 + + 120 | | | |
|-----------------------|--|---|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 3/1R | |
| 3/1RR | TAL: | 3/1R | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| : 3/3 | | | |
| | HDW/FUNC 3/3 3/1RR 3/1R 3/1R | 3/3 RTLS: 3/1RR TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 56V76A136F3
PART NUMBER: ME451-0016-0150

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO LOADS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AE24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 1/1 MDAC ID: 5446 ABORT: 1/1

ITEM: FUSE, 100A TO ALCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) FUSE, 100A TO ALCA-3

5)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 1/1 | TAL: | 1/1 |
| ONORBIT: | 3/1R | AOA: | 1/1 |
| DEORBIT: | 3/1R | ATO: | 1/1 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [F]

LOCATION: 56V76A136F6

PART NUMBER: ME451-0016-0100(?-2100)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE CAUSES LOSS OF POWER TO MPS VALVE SOLENOIDS. IF CERTAIN VALVES ARE NOT CLOSED AT ET SEP, THE ET COULD RECONTACT THE ORBITER CAUSING TPS DAMAGE AND/OR DESTRUCTION OF THE VEHICLE/CREW.

REFERENCES: 76AE7H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5447 ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W (TO SIG COND OA3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) RESISTOR, 1.8K 1/4W (TO SIG COND OA3)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | V-12 VIII | | | |
|----------------|-----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING | : 3/3 | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136A1R63
PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS MEASUREMENT IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AE7H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5448 ABORT: 2/1R

ITEM: RESISTOR, 1.2K 2W (TO APCA-6)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS CA2
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO APCA-6)
- 4) 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 3/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A4R4
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF DC POWER TO MCA BUS. CRITICAL ITEMS ARE SUPPLIED BY TWO MCAS. SECOND FAILURE COULD CAUSE LOSS OF ABILITY TO CLOSE DOORS RESULTING IN STRUCTURAL DAMAGE TO VEHICLE ON ENTRY AND POSSIBLE LOSS OF CREW/VEHICLE.

REFERENCES: 76AF24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5449 ABORT: 2/1R

ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN C AFT 3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) CONT BUS CA2
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (MCA LOGIC MN C AFT 3)

5) 6)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| | CITTICITITIO | |
|----------|--|---|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 2/1R |
| 3/3 | TAL: | 2/1R |
| 2/1R | AOA: | 2/1R |
| 2/1R | ATO: | 2/1R |
| : 3/3 | | |
| | HDW/FUNC 3/3 3/3 2/1R 2/1R | 3/3 RTLS: 3/3 TAL: 2/1R AOA: 2/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S14
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT DC POWER TO MCA. SECOND FAILURE COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CLOSE DOORS AND CONTROL RCS/OMS VALVES.

REFERENCES: 76AF23H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5450 3/3 MDAC ID: ITEM: SWITCH, TOGGLE SPST (MCA LOGIC MN C AFT 3) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) CONT BUS CA2 3) MA73C PANEL 4) SWITCH, TOGGLE SPST (MCA LOGIC MN C AFT 3) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 85V73A129S14 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS THIS SWITCH IS NORMALLY ON.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5451 ABORT: 2/1R

ITEM: RPC, 5A (TO AMCA-3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) RPC, 5A (TO AMCA-3)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 56V76A136RPC24
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE CAUSES LOSS OF ONE MCA BUS. CRITICAL LOADS ARE REDUNDANTLY POWERED. SECOND FAILURE TO ONE OF THESE LOADS MAY CAUSE LOSS OF CREW/VEHICLE, IF DOOR CLOSURE COULD NOT BE PERFORMED PRIOR TO ENTRY.

REFERENCES: 76AF17H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5452 RPC, 5A (TO AMCA-3) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) APCA-6 4) RPC, 5A (TO AMCA-3) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 56V76A136RPC24 PART NUMBER: MC450-0017-1050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

REFERENCES: 76AF17H

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5453 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAI PANEL
- 4) RESISTOR, 1.2K 2W (TO ESS BUS 1BC)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1A4R1
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF MANUAL CONTROL TO CONNECT ONE MAIN DC BUS TO THE ESSENTIAL BUS. REDUNDANT POWER IS AVAILABLE. CREW/VEHICLE LOSS IS CERTAIN IF ALL POWER TO ESS BUSSES IS LOST DUE TO THE INABILITY TO POWER ALL CRITICAL LOADS.

REFERENCES: 76AK24H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: EPD&C MDAC ID: 5454 SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN B/C) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC 2) R1A1 PANEL 3) MAIN DC DIST ASSY #2 & #3 4) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN B/C) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: 3/3 PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: ONORBIT: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1S4 PART NUMBER: ME452-0102-7301 CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION EFFECTS/RATIONALE:

.

REFERENCES: 76AK24H,21H,11F

NO EFFECT AS THIS IS NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5455 ABORT: 3/1R

ITEM: SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN B/C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIA1 PANEL
- 3) MAIN DC DIST ASSY #2 & #3
- 4) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN B/C)
- 5) 6)
- 7)
- 8)

=

9) 05-6

CRITICALITIES

| | ~~\~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ | | |
|-----------------|--|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1S4
PART NUMBER: ME452-0102-7301

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF MANUAL CONTROL TO CONNECT MAIN DC BUS POWER TO ESSENTIAL BUS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AK24H,21H,11F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SURSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5456 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAL PANEL
- 4) RESISTOR, 1.2K 2W (TO ESS BUS 1BC)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | • | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1A4R2
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF MANUAL CONTROL TO CONNECT ONE MAIN DC BUS TO THE ESSENTIAL BUS. REDUNDANT POWER IS AVAILABLE. CREW/VEHICLE LOSS IS CERTAIN IF ALL POWER TO ESS BUSSES IS LOST DUE TO THE INABILITY TO POWER ALL CRITICAL LOADS.

REFERENCES: 76AK21H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5457 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W TO MDM OF4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RIAL PANEL
- 4) RESISTOR, 5.1K 1/4W TO MDM OF4
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | CIVITION | 11110 | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A1A1A4R3
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76AK20G

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5458 SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 1) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC 2) RIAL PANEL 3) MAIN DC DIST ASSY #1 4) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1S7 PART NUMBER: ME452-0102-7303 CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION EFFECTS/RATIONALE: NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AK19F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5459 ABORT: 3/1R

ITEM: SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #1
- 4) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 1)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | * |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S7
PART NUMBER: ME452-0102-7303

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT SOURCE TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AK19F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5460 RESISTOR, 5.1K 1/4W TO MDM OF4 ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC 2) MAIN DC DIST ASSY #1 3) RIAI PANEL 4) RESISTOR, 5.1K 1/4W TO MDM OF4 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: TAL: 3/3 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1A7R1 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION. REFERENCES: 76AK18F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5461 MDAC ID: RESISTOR, 1.8K 1/4W (TO MDM OF2) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 2) 3) MPCA-2 RESISTOR, 1.8K 1/4W (TO MDM OF2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A1R2 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76AK22B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5462 ITEM: RESISTOR, 2.2K 1/2W (TO MDM OF2) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 4) RESISTOR, 2.2K 1/2W (TO MDM OF2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A1R7 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION. REFERENCES: 76AK22B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5463 FLIGHT: 3/1R

ITEM: DIODE, ISOLATION (TO MPCA-2 - ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAL PANEL
- 4) DIODE, ISOLATION (TO MPCA-2 ESS BUS 1BC)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26A1CR1
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE TO THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AK24B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 MDAC ID: 5464 ABORT: DIODE, ISOLATION (TO MPCA-2 - ESS BUS 1BC) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) RIA1 PANEL 4) DIODE, ISOLATION (TO MPCA-2 - ESS BUS 1BC) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A1CR1 PART NUMBER: JANTXV1N4246 CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS DIODE IS USED FOR ISOLATION BETWEEN THE VEHICLE AND GROUND CIRCUITS AND IS NON-CRITICAL DURING FLIGHT OPERATIONS.

REFERENCES: 76AK24B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5465 ABORT: 3/3

TTEM:

DIODE, BLOCKING

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC GROUND C/O
- 2) MDM LF1
- 3) DIODE, BLOCKING
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| ' HDW/FUNC |
|------------|
| LS: 3/3 |
| L: 3/3 |
| A: 3/3 |
| 0: 3/3 |
| • |
| |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A1CR2 PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS ONLY USED DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT.

REFERENCES: 76AK23B

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5466 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|---|
| ITEM: DIODE, BLOCKING FAILURE MODE: FAILS OPEN | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) ESS BUS 1BC - GROUND C/O 2) MDM LF1 3) DIODE, BLOCKING 4) 5) 6) 7) 8) | |
| 9) 05-6 | |
| CRITICAL | |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| REDUNDANCY SCREENS: A [] | в[] с[] |
| LOCATION: 40V76A26A1CR2 PART NUMBER: JANTXV1N4246 | |
| CAUSES: CONTAMINATION, THERMAL STR | ESS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS ITEM IS ONLY USED DURING GROUN FLIGHT. | ND C/O AND IS NOT CRITICAL FOR |
| REFERENCES: 76AK23B | |

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 3/1R SUBSYSTEM: EPD&C ABORT: 3/1R MDAC ID: 5467

RPC, 10A TO MDCA #1 - ESS BUS 1BC ITEM:

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- MAIN DC DIST ASSY #2 2)
- MPCA-2 3)
- 4) RPC, 10A TO MDCA #1 - ESS BUS 1BC
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | : |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC1

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE POWER PATH TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AK23B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5468 ITEM: RPC, 10A TO MDCA #1 - ESS BUS 1BC FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 4) RPC, 10A TO MDCA #1 - ESS BUS 1BC 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: AOA: 3/3 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26RPC1 PART NUMBER: MC450-0017-2100 (?-1100) CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD RESULT IN THE INABILITY TO DISCONNECT THE MAIN DC BUS FROM THE ESSENTIAL BUS. THIS IS NOT A PROBLEM BECAUSE THE MAIN DC BUS IS NORMALLY CONNECTED TO THE ESSENTIAL BUS DURING FLIGHT.

REFERENCES: 76AK23B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5469 ABORT: 3/1R

ITEM: RPC, 10A TO MDCA #1 - ESS BUS 1BC

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) RPC, 10A TO MDCA #1 ESS BUS 1BC
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

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|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A27RPC2

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE POWER PATH TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AK21D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5470 RPC, 10A TO MDCA #1 - ESS BUS 1BC ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) MPCA-3 4) RPC, 10A TO MDCA #1 - ESS BUS 1BC 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH:

| 3/3 | RTLS: | 3/3 |
|-----|-------|-----|
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |

ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27RPC2

LIFTOFF:

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD RESULT IN THE INABILITY TO DISCONNECT THE MAIN DC BUS FROM THE ESSENTIAL BUS. THIS IS NOT A PROBLEM BECAUSE THE MAIN DC BUS IS NORMALLY CONNECTED TO THE ESSENTIAL BUS DURING FLIGHT.

REFERENCES: 76AK21D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5471 ABORT: 3/3

ITEM: RESISTOR, 1.8K 1/4W (TO MDM OF3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) RESISTOR, 1.8K 1/4W (TO MDM OF3)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A1R3
PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76AK20C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5472 MDAC ID: RESISTOR, 2.2K 1/2W (TO MDM OF3) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 4) RESISTOR, 2.2K 1/2W (TO MDM OF3) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27A1R4 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5473 ABORT: 3/1R

ITEM: DIODE, ISOLATION (TO MPCA-3 - ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RIA1 PANEL
- 4) DIODE, ISOLATION (TO MPCA-3 ESS BUS 1BC)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| | | ******* | | | | |
|---|-----------------|----------|-------|----------|--|--|
| | FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | | |
| j | PRELAUNCH: | 3/3 | RTLS: | 3/1R | | |
| | LIFTOFF: | 3/1R | TAL: | 3/1R | | |
| | ONORBIT: | 3/1R | AOA: | 3/1R | | |
| | DEORBIT: | 3/1R | ATO: | 3/1R | | |
| | LANDING/SAFING: | 3/3 | | • | | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A27A1CR3
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE TO THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 5474 MDAC ID: DIODE, ISOLATION (TO MPCA-3 - ESS BUS 1BC) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) RIAI PANEL 4) DIODE, ISOLATION (TO MPCA-3 - ESS BUS 1BC) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27A1CR3 PART NUMBER: JANTXV1N4246 CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS DIODE IS USED FOR ISOLATION BETWEEN THE VEHICLE AND GROUND CIRCUITS AND IS NON-CRITICAL DURING FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C 3/3 FLIGHT: 3/3 MDAC ID: 5475 ABORT: ITEM: DIODE, BLOCKING FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: ESS BUS 1BC - GROUND C/O 1) 2) MDM LF1 3) DIODE, BLOCKING 4) 5) 6) 7) 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A1CR4
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS ONLY USED DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT.

REFERENCES: 76AK22D

| DATE: SUBSYS MDAC | STEM: ID: | 3/11/87 EPD&C 5476 | | | HIGHEST | CRITICALI FLIGHT: ABORT: | • |
|----------------------------|--------------------|-----------------------------------|---------|------------|------------|--------------------------------|--------------|
| | | DIODE, FAILS O | | ING | | | |
| LEAD 2 | analyst | : K. SCHME | CKPEPI | ER | SUBSYS I | LEAD: K. S | CHMECKPEPER |
| 1) I 2) N | ESS BUS IDM LF1 | ERARCHY: 1BC - GRO BLOCKING | ound c, | / 0 | | | |
| • | 05-6 | | | | | | |
| | | | | CRITICAL | ITIES | | |
| F | LIGHT P | HASE | HDW/FU | JNC | ABORT | HDW/ | 'FUNC |
| | PRELA | UNCH: | 3/3 | | RTI | LS: 3/ | '3 |
| | LIFTO | FF: | 3/3 | | TAI AOA | j: 3/ | ′ 3 |
| | ONORB | IT: | 3/3 | | AOA | A: 3/ | ′ 3 : |
| | DEORB | IT: | 3/3 | | ATC |): 3/ | ′ 3 |
| | LANDI | NG/SAFING: | 3/3 | | | | |
| REDUNI | DANCY S | CREENS: | A [|] 1 | 3 [] | c [|] |
| | | 40V76A27 JANTXV1N | | | | | |
| CAUSES | S: CON | NOITANIMAT | , THEF | RMAL STRI | ESS, VIBE | RATION, ME | сн ѕноск |
| EFFECT THIS I FLIGHT | | ONALE: ONLY USEI | DURI | NG GROUN | D C/O ANI | D IS NOT C | RITICAL FOR |
| | | | • | | | | |

REFERENCES: 76AK22D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5477 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #1
- 2) MAIN DC DIST ASSY #1
- 3) RIA1 PANEL
- 4) DIODE, ISOLATION 35A (ESS BUS 1BC)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| ~~·~~~~~~ | | |
|-----------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | · |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LOSE CRITICAL LOADS AND CREW/VEHICLE.

HIGHEST CRITICALITY HOW/FUNC 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 MDAC ID: 5478 ABORT: ITEM: DIODE, ISOLATION 35A (ESS BUS 1BC) FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #1 2) MAIN DC DIST ASSY #1 3) R1A1 PANEL 4) DIODE, ISOLATION 35A (ESS BUS 1BC) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
LIFTOFF: 3/3 TAL: 3/3
ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A31CR1 PART NUMBER: JANTXIN1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS ANOTHER ISOLATION DIODE IN SERIES WOULD BLOCK REVERSE CURRENT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 MDAC ID: 5479 ABORT: DIODE, ISOLATION 35A (ESS BUS 1BC) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 DIODE, ISOLATION 35A (ESS BUS 1BC) 4) 5) 6) 7)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31CR2 PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

8) 9)

05-6

THIS FAILURE WOULD HAVE NO EFFECT AS AN RPC IN SERIES WOULD BLOCK

REVERSE CURRENT UP TO 12 AMPS..

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5480 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (ESS BUS 1BC)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LOSE CRITICAL LOADS AND CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5481 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) DIODE, ISOLATION 35A (ESS BUS 1BC)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| | ~ | | | |
|-----------------|----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |
| | | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31CR3
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LOSE CRITICAL LOADS AND CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 EPD&C SUBSYSTEM: 3/3 ABORT: 5482 MDAC ID: DIODE, ISOLATION 35A (ESS BUS 1BC) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C MAIN DC DIST ASSY #3 2) 3) MPCA-3 4) DIODE, ISOLATION 35A (ESS BUS 1BC) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A31CR3 PART NUMBER: JANTXIN1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS AN RPC IN SERIES WOULD BLOCK REVERSE CURRENT UP TO 12 AMPS...

HDW/FUNC DATE: 3/11/87 HIGHEST CRITICALITY SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 MDAC ID: 5483 ABORT: ITEM: DIODE, ISOLATION 35A (TO RIA1 PANEL - ESS BUS 1BC) FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #1 MAIN DC DIST ASSY #1 3) DIODE, ISOLATION 35A (TO RIAL PANEL - ESS BUS 1BC) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3

AOA:

ATO:

_3/3

3/3

REDUNDANCY SCREENS: A [] B [] C []

3/3

3/3

LOCATION: 40V76A31CR4
PART NUMBER: JANTX1N1188R

LANDING/SAFING: 3/3

ONORBIT:

DEORBIT:

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS ANOTHER ISOLATION DIODE IN SERIES WOULD BLOCK REVERSE CURRENT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5484 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (TO R1A1 PANEL - ESS BUS 1BC)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

1) FUEL CELL #1

2) MAIN DC DIST ASSY #1

DIODE, ISOLATION 35A (TO RIA1 PANEL - ESS BUS 1BC)

4) 5)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31CR4
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD POSSIBLY CAUSE LOSS OF CRITICAL LOADS AND CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: ABORT: 3/1R 5485

ITEM: FUSE, 7.5A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 7.5A
- 4)
- 5)
- 6)
- 7) 8)
- 05-6 9)

CRITTCALITTES

| | CIVITION | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | : 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

40V76A31F2

PART NUMBER: ME451-0009-1019

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO PANELS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/1R SUBSYSTEM: EPD&C ABORT: 3/1R 5486 MDAC ID:

ITEM:

FUSE, 10A TO ESS BUS 1BC

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #1
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 10A TO ESS BUS 1BC

4)

5) 6)

7)

8) 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F29

PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE PATH FROM THE FUEL CELL TO THE ESSENTIAL BUS. REDUNDANT PATH AND POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO ESSENTIAL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5487 ABORT: 3/1R

ITEM: FUSE, 10A TO ESS BUS 1BC

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #1
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 10A TO ESS BUS 1BC
- 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|-----------------|--|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F30
PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE PATH FROM THE FUEL CELL TO THE ESSENTIAL BUS. REDUNDANT PATH AND POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO ESSENTIAL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER LOADS.

| DATE: SUBSYSTEM: I MDAC ID: | | | HIGHEST | CRITICALITY FLIGHT: ABORT: | HDW/FUNC 3/3 3/3 |
|--|------------------------|--------------------------------------|-----------------------------------|-----------------------------|------------------------|
| ITEM: FAILURE MODE | | TO SIG COND/ PEN | MDM MONI | TOR | |
| LEAD ANALYST | K. SCHME | KPEPER | SUBSYS I | EAD: K. SCHM | ECKPEPER |
| BREAKDOWN HIT 1) ESS BUS 2) MAIN DC 3) FUSE, 3A 4) 5) 6) 7) | 1BC DIST ASSY | #1 ND/MDM MONITO | R | to d | |
| 9) 05-6 | | | | | |
| | | CRITICALI | יחדדים | | |
| FLIGHT PH PRELAU LIFTON ONORBI DEORBI LANDIN | JNCH: FF: IT: | IDW/FUNC 3/3 3/3 3/3 3/3 | ABORT RTI TAI AOA ATO | .S: 3/3 .: 3/3 .: 3/3 | |
| REDUNDANCY SO | CREENS: A | . [] E | [] | C [] - | |
| LOCATION: PART NUMBER: | 40V76A31F MC451-000 | | | | |
| CAUSES: CONT | CAMINATION, | VIBRATION, M | ЕСН ЅНОС | K, THERMAL S | TRESS |
| | WOULD CAUS | E THE LOSS OF ITORS AND IND | A NON-C | | UREMENT |
| REFERENCES: | 76AK17A | | | | |

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5489 ABORT: 3/1R

ITEM: FUSE, 15A TO APCA-4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 15A TO APCA-4
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | , |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F8

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE SOURCE OF POWER TO CRITICAL LOADS SUPPLIED THROUGH THE PCA. LOSS OF ALL ESSENTIAL BUS POWER TO THESE LOADS WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 5490 MDAC ID: ITEM: FUSE, 5A FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC MAIN DC DIST ASSY #1 3) FUSE, 5A TO H2/02 CONT BOX #2 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A31F6 PART NUMBER: ME451-0009-1021 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: NO LOADS CONNECTED TO THIS FUSE.

REFERENCES: 76AK15H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R MDAC ID: 5491 ABORT:

FUSE, 10A TO ML86B PANEL ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) MAIN DC DIST ASSY #1
- FUSE, 10A TO ML86B PANEL 3)

4)

5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31F9

PART NUMBER: ME451-0009-5100 (?1005)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO CRYO LOADS. LOSS OF ALL POWER TO CRYO LOADS COULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AK15H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5492 ABORT: 3/1R

ITEM: FUSE, 15A TO MPCA-1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 15A TO MPCA-1
- 4)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | - |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F3

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE SOURCE OF POWER TO CRITICAL LOADS SUPPLIED THROUGH THE PCA. LOSS OF ALL ESSENTIAL BUS POWER TO THESE LOADS WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AK14H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5493 ABORT: 3/3 ITEM: FUSE, 10A FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC 2) MAIN DC DIST ASSY #1 3) FUSE, 10A TO H2/02 CONT BOX #4 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES

| | 01/11/01 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • • |

REDUNDANCY SCREENS: A [] B [] C []

40V76A31F5 LOCATION:

PART NUMBER: ME451-0009-5100 (?1005)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

NO LOADS CONNECTED TO THIS FUSE.

REFERENCES: 76AK13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5494 ABORT: 3/1R

ITEM: FUSE, 10A TO FPCA-1 & FLCA1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

1) ESS BUS 1BC

2) MAIN DC DIST ASSY #1

3) FUSE, 10A TO FPCA-1 & FLCA1

4) 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| A414 4 4 4. | | | |
|-------------|---|--|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 3/1R | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| : 3/3 | | | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F7

PART NUMBER: ME451-0009-1005

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF POWER TO CONTROL ONE AC BUS INVERTER SET. LOSS OF ALL INVERTER SETS CONTROL COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL AC POWER GENERATION.

REFERENCES: 76AK13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5495 ABORT: 3/1R

ITEM: FUSE, 10A TO R15 PANEL

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 10A TO R15 PANEL
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| AT/T T T AT | | |
|-------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | - |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A31F10
PART NUMBER: ME451-0009-1005

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO C & W PANEL AND ONE AC BUS SENSOR SWITCH. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AK12H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5496 ABORT: 3/1R

ITEM: FUSE, 7.5A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) MAIN DC DIST ASSY #1
- 3) FUSE, 7.5A
- 4) 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC - |
|----------|----------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| G: 3/3 | | • |
| | 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A31F4

PART NUMBER: ME451-0009-1019

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO PANELS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AK11H

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 5497 MDAC ID: ITEM: RESISTOR, 5.1K 1/4W (TO ESS 1BC MONITOR) FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC MAIN DC DIST ASSY #1 2) RESISTOR, 5.1K 1/4W (TO ESS 1BC MONITOR) 3) 4) 5) 6) 7) 8) 9) 05-6

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|--------|----|-----|-----|-----|
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| | CIVITATION | | |
|-----------------|------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A31R1
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED TO TEST THE ESSENTIAL BUS 1BC. THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS ALTERNATE TEST MEASUREMENTS ARE AVAILABLE TO THE CREW,

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5498 RPC, 15A (TO ESS BUS 1BC) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #1 2) 3) APCA-4 4) RPC, 15A (TO ESS BUS 1BC) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134RPC3 PART NUMBER: MC450-0017-2150 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS ITEM IS USED FOR GSE C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS. REFERENCES: 76AK16D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5499 ABORT: 3/3

ITEM: RPC, 15A (TO ESS BUS 1BC)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLIGHT TEST BUS #1
- 3) APCA-4
- 4) RPC, 15A (TO ESS BUS 1BC)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

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|-----------------|---------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A134RPC3 PART NUMBER: MC450-0017-2150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GSE C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 5500 MDAC ID: RESISTOR, 5.1K (ESS BUS 1BC VOLTAGE) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER PRE-FLIGHT TEST BUS #1 2) 3) APCA-4 RESISTOR, 5.1K (ESS BUS 1BC VOLTAGE) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134A1R22 PART NUMBER: RLR07C512GR (?) CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY. NO EFFECT ON FLIGHT OPERATIONS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5501 ABORT: 3/1R

ITEM: FUSE, 7.5A TO ALCA-1 (MPS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 1BC
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- 4) FUSE, 7.5A TO ALCA-1 (MPS)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | ~~~~~~~~ | | | |
|-----------------|----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | - | |
| | | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 54V76A134F10 PART NUMBER:

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF FOUR SIGNAL SOURCES TO THE LO2 PREVALVE IN ONE ENGINE. LOSS OF ALL REDUNCANCY WOULD LOSE THE VALVE WHICH COULD RESULT IN LOSS OF CREW/VEHICLE BY EXPLOSION OR LOSS OF CG MANAGEMENT ON ENTRY.

| SUBS | : YSTEM : ID: | : E | | 37 | | | 1 | HIG: | HEST (| CRITI FLI ABO | GH' | T: | HDW/FUNC 3/3 3/3 |
|--|-----------------------|--------|-------------------------------|------|------------|-------|-------|------------|--------|---------------------|-----|------|------------------------|
| ITEM FAII | I: JURE M | ODE: | DIOD FAIL | E, I | SOLA EN | MOIT. | 1 35A | (TO | ESS 1 | BUS 1 | .BC |) | |
| LEAD | ANAL | YST: | K. SCI | IMEÇ | KPEP | ER | : | SUB | SYS LI | EAD: | K. | SCHM | MECKPEPER |
| 1) 2) 3) 4) 5) 6) 7) | PRE- | FLIG | ERARCHY HT TES! SOLATIO | r bu | • | | SS BU | S 1 | BC) | | | - | |
| 8) 9) | 05-6 | | | | | | | | | | | | |
| | | | | | | сътт | ICALI | ישדי | 9 | | | | |
| | RT.TCH | ਾ ਸ਼ੁਧ | ASE | H | | | | | BORT | | HDI | /FUN | 1C |
| | | | NCH: | •• | 3/3 | | | | RTLS | 3: | | 3/3 | |
| | | FTOF | | | 3/3 | | | | TAL: | | | 3/3 | |
| | | | T: | | 3/3 | | | | AOA: | | | 3/3 | |
| | | | T: | | 3/3 | | | | ATO: | | | 3/3 | |
| | | | G/SAFII | 1G: | | | | | | | | ,, , | |
| REDU | NDANC | Y śc | REENS: | A | [|] | В | [| J | С | [|] | |
| | | | 54V76Z JANTX: | | | | | | | | | | |
| CAUS | ES: | CONT | AMINAT: | CON, | THE | RMAL | STRES | ss, | VIBRA | TION | , M | IECH | SHOCK |
| THIS | CTS/R TEM NG FI | IS | USED D | JRIN | IG GR | OUNI | o c/o | ONL | Y AND | is no | Ť | POWE | RED |

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5503 DIODE, ISOLATION 35A (TO ESS BUS 1BC) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: PRE-FLIGHT TEST BUS #1 2) APCA-4 DIODE, ISOLATION 35A (TO ESS BUS 1BC) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A134CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5504 DIODE, ISOLATION 35A (TO ESS BUS 1BC) ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: PRE-FLIGHT TEST BUS #1 2) APCA-4 DIODE, ISOLATION 35A (TO ESS BUS 1BC) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: AOA: ONORBIT: 3/3 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134CR2 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

HDW/FUNC HIGHEST CRITICALITY DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5505 DIODE, ISOLATION 35A (TO ESS BUS 1BC) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: PRE-FLIGHT TEST BUS #1 1) 2) APCA-4 DIODE, ISOLATION 35A (TO ESS BUS 1BC) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL:

3/3

3/3

AOA:

ATO:

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

3/3

3/3

LOCATION: 54V76A134CR2
PART NUMBER: JANTX1N1188R

ONORBIT:

DEORBIT:

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5506 HYBRID DRIVER TYPE I (ESS BUS 1BC) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #1 3) APCA-4 4) ALCA-1 5) HYBRID DRIVER TYPE I (ESS BUS 1BC) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A121AR PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND CHECKOUT ONLY. NO EFFECT ON FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 5507 ABORT: MDAC ID:

ITEM: HYBRID DRIVER TYPE I (ESS BUS 1BC)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLIGHT TEST BUS #1
- 3) APCA-4
- ALCA-1 4)
- HYBRID DRIVER TYPE I (ESS BUS 1BC) 5)
- 6) 7)
- 8)
- 05-6 9)

CRITICALITIES

| | ~~·~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | |
|----------------|--|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | 3/3 | | - |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A121AR PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND CHECKOUT ONLY. NO EFFECT ON FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5508 MDAC ID: RESISTOR, 5.1K (ESS BUS 1BC TEST POINT) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 1BC MAIN DC DIST ASSY #1 3) FPCA-1 4) RESISTOR, 5.1K (ESS BUS 1BC TEST POINT) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A22A1R74 PART NUMBER: RLR07C512GR (?) CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED IN A NON-CRITICAL MEASUREMENT CIRCUIT. NO

REFERENCES: 76AK12C

EFFECT ON CREW/MISSION/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5509 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO APCA-5)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC1
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO APCA-5)
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/3 | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A5R2
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO THE OMS/RCS DC BUS. THE SECOND FAILURE COULD CAUSE LOSS OF THE BUSS. CRITICAL FUNCTIONS ARE PERFORMED OFF OF TWO BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL RCS VALVES.

REFERENCES: 76AK4F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R
MDAC ID: 5510 ABORT: 3/1R

ITEM: SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) RCS/OMS BC BUS
- 2) CONT BUS BC1
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/2)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S16
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO ONE OMS/RCS DC BUS. SECOND FAILURE WOULD LOSE THE BUS. LOSS OF ALL RCS/OMS DC BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE IN THE EVENT A CROSSFEED OF PROP IS REQUIRED.

REFERENCES: 76AK4F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5511 ITEM: SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/2) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) RCS/OMS BC BUS 2) CONT BUS BC1 3) MA73C PANEL SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 LIFTOFF: TAL: 3/3 AOA: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C [

LOCATION: 85V73A129S16
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AK4F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5512 ABORT: 3/1R

ITEM: RP

RPC, 5A (TO RCS/OMS BC BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) RPC, 5A (TO RCS/OMS BC BUS)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| | 7512 5 5 5 | | | |
|-----------------|-------------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/3 | TAL: | 3/1R | |
| ONORBIT: | 3/3 | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | • | | · | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 55V76A135RPC23
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO POWER SOURCES TO THE OMS/RCS BUS. SECOND FAILURE TO OTHER SOURCE WOULD LOSE THE BUS. THIS MAY CAUSE LOSS OF CREW/VEHICLE IN A PROP CROSSFEED SITUATION.

REFERENCES: 76AK6E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5513 ABORT: 3/3

ITEM: RPC, 5A (TO RCS/OMS BC BUS)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) RPC, 5A (TO RCS/OMS BC BUS)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135RPC23 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AK6E

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 3/1R

MDAC ID: 5514

ABORT: 3/1R

ITEM:

DIODE, 12A (TO RCS/OMS BC BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- APCA-5 3)
- 4) AMCA-2
- 5) DIODE, 12A (TO RCS/OMS BC BUS)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | | |

LANDING/SATING:

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 55V76All5CRl PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES TO THE OMS/RCS BUS. NEXT FAILURE TO THAT BUS WOULD CAUSE LOSS OF POWER TO PROP VALVES WHICH MIGHT CAUSE LOSS OF CREW/VEHICLE DURING A CROSSFEED SITUATION.

REFERENCES: 76AK6C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5515 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS BC BUS)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) AMCA-2
- 5) DIODE, 12A (TO RCS/OMS BC BUS)

6)

7) 8)

9) 05-6

CRITICALITIES

| | | / | | |
|-----------------|----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | - | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 55V76A115CR1
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON RCS/OMS BUS LOADING. IF THE RPC OPENS, IT WOULD REMOVE ONE SOURCE OF POWER TO TWO OMS/RCS BUSSES. THE NEXT FAILURE COULD CAUSE THE LOSS OF ONE RCS/OMS BUS WHICH MIGHT CAUSE A LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL PROP VALVES DURING A CROSSFEED SITUATION.

REFERENCES: 76AK6C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5516

ABORT:

3/1R

DIODE, 12A (TO RCS/OMS BC BUS)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER

SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) AMCA-2
- 5) DIODE, 12A (TO RCS/OMS BC BUS)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 55V76A115CR2

PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON RCS/OMS BUS LOADING. IF THE RPC OPENS, IT WOULD REMOVE ONE SOURCE OF POWER TO TWO OMS/RCS BUSSES. THE NEXT FAILURE COULD CAUSE THE LOSS OF ONE RCS/OMS BUS WHICH MIGHT CAUSE A LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL PROP VALVES DURING A CROSSFEED SITUATION.

REFERENCES: 76AK5C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5517 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS BC BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) AMCA-2
- 5) DIODE, 12A (TO RCS/OMS BC BUS)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC |
|----------|
| |
| 3/1R |
| 3/1R |
| 3/1R |
| 3/1R |
| • |
| |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 55V76A115CR2
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES TO THE OMS/RCS BUS. NEXT FAILURE TO THAT BUS WOULD CAUSE LOSS OF POWER TO PROP VALVES WHICH MIGHT CAUSE LOSS OF CREW/VEHICLE DURING A CROSSFEED SITUATION.

REFERENCES: 76AK5C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

MDAC ID: 5518

FLIGHT: 3/1R ABORT:

3/1R

ITEM: SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN C/A)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #1 & #3
- 4) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN C/A)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1S5

PART NUMBER: ME452-0102-7301

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF MANUAL CONTROL TO CONNECT MAIN DC BUS POWER TO ESSENTIAL BUS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AM24H,21H,11F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: SUBSYSTEM: EPD&C 3/3 FLIGHT: ABORT: 3/3

MDAC ID: 5519

SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN C/A) ITEM: FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #1 & #3
- SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN C/A) 4)
- 5) 6)
- 7)
- 8)
- 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A1A1S5

PART NUMBER: ME452-0102-7301

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AM24H,21H,11F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5520 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RIAL PANEL
- 4) RESISTOR, 1.2K 2W (TO ESS BUS 2CA)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1A5R1
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF MANUAL CONTROL TO CONNECT ONE MAIN DC BUS TO THE ESSENTIAL BUS. REDUNDANT POWER IS AVAILABLE.

CREW/VEHICLE LOSS IS CERTAIN IF ALL POWER TO ESS BUSSES IS LOST DUE TO THE INABILITY TO POWER ALL CRITICAL LOADS.

REFERENCES: 76AM24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5521 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAL PANEL
- 4) RESISTOR, 1.2K 2W (TO ESS BUS 2CA)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |
| • | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73AlAlA5R2
PART NUMBER: RWR80Sl211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF MANUAL CONTROL TO CONNECT ONE MAIN DC BUS TO THE ESSENTIAL BUS. REDUNDANT POWER IS AVAILABLE. CREW/VEHICLE LOSS IS CERTAIN IF ALL POWER TO ESS BUSSES IS LOST DUE TO THE INABILITY TO POWER ALL CRITICAL LOADS.

REFERENCES: 76AM21H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 5522 MDAC ID: RESISTOR, 5.1K 1/4W TO MDM OF4 ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) R1A1 PANEL 4) RESISTOR, 5.1K 1/4W TO MDM OF4 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 TAL: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 AOA: ONORBIT: 3/3 3/3 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1A5R3 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76AM20G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5523 ABORT: 3/3

ITEM: RESISTOR, 5.1K 1/4W TO MDM OF4

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) RIAI PANEL
- 4) RESISTOR, 5.1K 1/4W TO MDM OF4
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A1A1A8R1
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/VEHICLE/MISSION.

REFERENCES: 76AM18F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

FLIGHT: 3/1R SUBSYSTEM: EPD&C ABORT: 3/1R MDAC ID: 5524

ITEM: SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- RIA1 PANEL
- 3) MAIN DC DIST ASSY #2
- SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 2) 4)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|-----------------------------|--|--|
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 3/1R | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| 3/3 | | | |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S8

PART NUMBER: ME452-0102-7303

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT SOURCE TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AM19F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5525 ABORT: 3/3

ITEM: SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 2)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) R1A1 PANEL
- 3) MAIN DC DIST ASSY #2
- 4) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 2)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A1A1S8
PART NUMBER: ME452-0102-7303

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AM19F

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5526 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|--|
| ITEM: DIODE, BLOCKING FAILURE MODE: FAILS OPEN | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) ESS BUS 2CA - GROUND C/O 2) MDM LF1 3) DIODE, BLOCKING 4) | en de la companya de |
| 5) 6) 7) 8) 9) 05-6 | |
| CRITICAL | TTIES |
| FLIGHT PHASE HDW/FUNC | |
| PRELAUNCH: 3/3 | RTLS: 3/3 |
| LIFTOFF: 3/3 | TAL: 3/3 |
| ONORBIT: 3/3 | AOA: 3/3 |
| DEORBIT: 3/3 | ATO: 3/3 |
| LANDING/SAFING: 3/3 | • |
| REDUNDANCY SCREENS: A [] | B[], C[] |
| LOCATION: 40V76A27A1CR1 PART NUMBER: JANTXV1N4246 | |
| CAUSES: CONTAMINATION, THERMAL STR | ESS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS ITEM IS ONLY USED DURING GROUNTING. | ND C/O AND IS NOT CRITICAL FOR |
| | |

REFERENCES: 76AM23B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5527 MDAC ID: DIODE, BLOCKING ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 2CA - GROUND C/O MDM LF1 2) DIODE, BLOCKING 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: B [] C [REDUNDANCY SCREENS: A [] LOCATION: 40V76A27A1CR1 PART NUMBER: JANTXV1N4246 CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS ONLY USED DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT.

REFERENCES: 76AM23B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5528 ABORT: DIODE, ISOLATION (TO MPCA-3 - ESS BUS 2CA) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) RIAI PANEL 4) DIODE, ISOLATION (TO MPCA-3 - ESS BUS 2CA) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: FLIGHT PHASE HDW/FUNC 3/3 PRELAUNCH: LIFTOFF: 3/3 ONORBIT: AOA: 3/3 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27A1CR2 PART NUMBER: JANTXV1N4246 CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS DIODE IS USED FOR ISOLATION BETWEEN THE VEHICLE AND GROUND CIRCUITS AND IS NON-CRITICAL DURING FLIGHT OPERATIONS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5529 ABORT: 3/1R

ITEM: DIODE, ISOLATION (TO MPCA-3 - ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) R1A1 PANEL
- 4) DIODE, ISOLATION (TO MPCA-3 ESS BUS 2CA)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A27A1CR2
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE TO THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AM24B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 5530 MDAC ID: RESISTOR, 1.8K 1/4W (TO MDM OF3) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 RESISTOR, 1.8K 1/4W (TO MDM OF3) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A27A1R1 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE:

REFERENCES: 76AM22B

FLIGHT/VEHICLE OPERATION.

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5531 ABORT: 3/3

ITEM: RESISTOR, 2.2K 1/2W (TO MDM OF3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) RESISTOR, 2.2K 1/2W (TO MDM OF3)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27A1R2 PART NUMBER: RLR20C222GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76AM22B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/1R SUBSYSTEM: EPD&C

3/1R ABORT: MDAC ID: 5532

ITEM: RPC, 10A TO MDCA #2 - ESS BUS 2CA

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 4) RPC, 10A TO MDCA #2 ESS BUS 2CA
- 5) 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A27RPC1

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE POWER PATH TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AM23B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5533 MDAC ID:

RPC, 10A TO MDCA #2 - ESS BUS 2CA ITEM:

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- MAIN DC DIST ASSY #3
- 3) MPCA-3
- RPC, 10A TO MDCA #2 ESS BUS 2CA 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A27RPC1

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD RESULT IN THE INABILITY TO DISCONNECT THE MAIN DC BUS FROM THE ESSENTIAL BUS. THIS IS NOT A PROBLEM BECAUSE THE MAIN DC BUS IS NORMALLY CONNECTED TO THE ESSENTIAL BUS DURING FLIGHT.

REFERENCES: 76AM23B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5534 ABORT: 3/1R

ITEM: RPC, 10A TO MDCA #2 - ESS BUS 2CA

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 10A TO MDCA #2 ESS BUS 2CA

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | • | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A25RPC2

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE POWER PATH TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AM21D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C

3/3 ABORT: MDAC ID: 5535

RPC, 10A TO MDCA #2 - ESS BUS 2CA ITEM:

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- MPCA-1 3)
- RPC, 10A TO MDCA #2 ESS BUS 2CA 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|--------------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | | |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC2

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD RESULT IN THE INABILITY TO DISCONNECT THE MAIN DC BUS FROM THE ESSENTIAL BUS. THIS IS NOT A PROBLEM BECAUSE THE MAIN DC BUS IS NORMALLY CONNECTED TO THE ESSENTIAL BUS DURING FLIGHT.

REFERENCES: 76AM21D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5536 ITEM: RESISTOR, 1.8K 1/4W (TO MDM OF2) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) MPCA-1 4) RESISTOR, 1.8K 1/4W (TO MDM OF2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 TAL: 3/3 PRELAUNCH: LIFTOFF: 3/3 3/3 3/3 AOA: ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A1R3 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HDW/FUNC HIGHEST CRITICALITY DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C

ABORT: 3/3 MDAC ID: 5537

RESISTOR, 2.2K 1/2W (TO MDM OF2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- MAIN DC DIST ASSY #1 2)
- MPCA-1 3)
- RESISTOR, 2.2K 1/2W (TO MDM OF2) 4)
- 5) 6)
- 7)
- 8)
- 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

B[] C[] REDUNDANCY SCREENS: A []

LOCATION: 40V76A25A1R4 PART NUMBER: RLR20C222GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO

FLIGHT/VEHICLE OPERATION.

REFERENCES: 76AM20C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5538 ABORT: 3/1R

ITEM: DIODE, ISOLATION (TO MPCA-1 - ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAL PANEL
- 4) DIODE, ISOLATION (TO MPCA-1 ESS BUS 2CA)

5) 6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A25A1CR3
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE TO THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AM21D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5539 ABORT: 3/3

ITEM: DIODE, ISOLATION (TO MPCA-1 - ESS BUS 2CA)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAL PANEL
- 4) DIODE, ISOLATION (TO MPCA-1 ESS BUS 2CA)
- 5)
- 6) 7)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A1CR3
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS DIODE IS USED FOR ISOLATION BETWEEN THE VEHICLE AND GROUND CIRCUITS AND IS NON-CRITICAL DURING FLIGHT OPERATIONS.

REFERENCES: 76AM21D

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5540 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 | | |
|---|---|--|--|
| ITEM: DIODE, BLOCKING FAILURE MODE: SHORTS | • | | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER | | |
| BREAKDOWN HIERARCHY: 1) ESS BUS 2CA - GROUND C/O 2) MDM LF1 3) DIODE, BLOCKING 4) 5) 6) 7) 8) | | | |
| 9) 05-6 | | | |
| CRITICAL | ITIES | | |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | | | |
| REDUNDANCY SCREENS: A [] | s[] c[] | | |
| LOCATION: 40V76A25A1CR4 PART NUMBER: JANTXV1N4246 | | | |
| CAUSES: CONTAMINATION, THERMAL STRE | ess, vibration, mech shock | | |
| EFFECTS/RATIONALE: THIS ITEM IS ONLY USED DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT. | | | |
| REFERENCES: 76AM22D | | | |

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: DIODE, BLOCKING ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 2CA - GROUND C/O 2) MDM LF1 3) DIODE, BLOCKING 4) 5) 6) 7) 8)

| CRITI | CALI | TIES |
|-------|------|------|
|-------|------|------|

| | V-12 | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A1CR4
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

05-6

9)

THIS ITEM IS ONLY USED DURING GROUND C/O AND IS NOT CRITICAL FOR

FLIGHT.

REFERENCES: 76AM22D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5542 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (TO R1A1 PANEL - ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #2
- 2) MAIN DC DIST ASSY #2
- 3) DIODE, ISOLATION 35A (TO RIAL PANEL ESS BUS 2CA)

4) 5)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | I |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32CR4
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD POSSIBLY CAUSE LOSS OF CRITICAL LOADS AND CREW/VEHICLE.

12.2.2.2.

REFERENCES: 76AM19H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5543 MDAC ID: DIODE, ISOLATION 35A (TO RIA1 PANEL - ESS BUS 2CA) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #2 2) MAIN DC DIST ASSY #2 DIODE, ISOLATION 35A (TO R1A1 PANEL - ESS BUS 2CA) 3) 4) 5) 6) 7)

9) 05-6

CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT 3/3 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32CR4
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

8)

THIS FAILURE WOULD HAVE NO EFFECT AS ANOTHER ISOLATION DIODE IN SERIES WOULD BLOCK REVERSE CURRENT.

REFERENCES: 76AM19H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 5544 MDAC ID: DIODE, ISOLATION 35A (ESS BUS 2CA) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 3) MPCA-1 DIODE, ISOLATION 35A (ESS BUS 2CA) 5) 6) 7) 8) 05-6 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 3/3 TAL: ONORBIT: 3/3 AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A32CR3 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS AN RPC IN SERIES WOULD BLOCK REVERSE CURRENT UP TO 12 AMPS.

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5545

ABORT:

3/1R

ITEM:

DIODE, ISOLATION 35A (ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER

SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- MAIN DC DIST ASSY #1
- MPCA-1 3)
- DIODE, ISOLATION 35A (ESS BUS 2CA) 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION:

40V76A32CR3

PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD POSSIBLY CAUSE LOSS OF CRITICAL LOADS AND CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5546 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35Ā (ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) DIODE, ISOLATION 35A (ESS BUS 2CA)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD POSSIBLY CAUSE LOSS OF CRITICAL LOADS AND CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5547 ABORT: 3/3

ITEM: DIODE, ISOLATION 35A (ESS BUS 2CA)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #3
- 3) MPCA-3
- 4) DIODE, ISOLATION 35A (ESS BUS 2CA)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS AN RPC IN SERIES WOULD BLOCK REVERSE CURRENT UP TO 12 AMPS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5548 DIODE, ISOLATION 35A (ESS BUS 2CA) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #2 2) MAIN DC DIST ASSY #2 3) RIAL PANEL 4) DIODE, ISOLATION 35A (ESS BUS 2CA) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC PRELAUNCH: RTLS: TAL: 3/3 3/3 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 3/3 3/3 ATO: DEORBIT: LANDING/SAFING: 3/3

LOCATION: 40V76A32CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

REDUNDANCY SCREENS: A [] B [] C []

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS ANOTHER ISOLATION DIODE IN SERIES WOULD BLOCK REVERSE CURRENT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5549 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (ESS BUS 2CA)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #2
- 2) MAIN DC DIST ASSY #2
- 3) RIA1 PANEL
- 4) DIODE, ISOLATION 35A (ESS BUS 2CA)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | • | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD POSSIBLY CAUSE LOSS OF CRITICAL LOADS AND CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5550 ABORT: 3/1R

ITEM: FUSE, 10A TO ESS BUS 2CA

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #2
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 10A TO ESS BUS 2CA

4) 5)

6)

7)

8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|-----------------------------|--|--|
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 3/1R | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| 3/3 | | - | |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F32

PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE PATH FROM THE FUEL CELL TO THE ESSENTIAL BUS. REDUNDANT PATH AND POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO ESSENTIAL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5551 ABORT: 3/1R

ITEM: FUSE, 10A TO ESS BUS 2CA

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #2
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 10A TO ESS BUS 2CA
- 4)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F33

PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE PATH FROM THE FUEL CELL TO THE ESSENTIAL BUS. REDUNDANT PATH AND POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO ESSENTIAL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER LOADS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/1R SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5552 ABORT:

ITEM: FUSE, 7.5A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 7.5A
- 4) 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32F2

PART NUMBER: ME451-0009-1019

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO PANELS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5553 ABORT: 3/3

ITEM: FUSE, 3A TO SIG COND/MDM MONITOR

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 3A TO SIG COND/MDM MONITOR
- 4)
- 5) 6)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FUNC | ABORT | HDW/FUNC |
|------------|------------------------------------|---|
| ' 3 | RTLS: | 3/3 |
| ' 3 | TAL: | 3/3 |
| ' 3 | AOA: | 3/3 |
| ' 3 | ATO: | 3/3 |
| '3 | | |
| | FUNC 3 3 3 3 3 3 | 73 RTLS: 73 TAL: 73 AOA: 73 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32F1

PART NUMBER: MC451-0009-1003

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5554 ABORT: 3/1R

ITEM: FUSE, 15A TO APCA-5

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 15A TO APCA-5
- 4) 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F8

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE SOURCE OF POWER TO CRITICAL LOADS SUPPLIED THROUGH THE PCA. LOSS OF ALL ESSENTIAL BUS POWER TO THESE LOADS WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5555 ITEM: FUSE, 5A FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 2CA MAIN DC DIST ASSY #2 FUSE, 5A TO H2/02 CONT BOX #1 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 C [] REDUNDANCY SCREENS: A [] B []

LOCATION: 40V76A32F6

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

NO LOADS CONNECTED TO THIS FUSE.

REFERENCES: 76AM15H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5556 ABORT: 3/1R

ITEM: FUSE, 10A TO ML86B PANEL

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 10A TO ML86B PANEL
- 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A32F9

PART NUMBER: ME451-0009-5100 (?1005)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO CRYO LOADS. LOSS OF ALL POWER TO CRYO LOADS COULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AM15H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5557 ABORT: 3/1R

ITEM: FUSE, 15A TO MPCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 15A TO MPCA-2
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F3

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE SOURCE OF POWER TO CRITICAL LOADS SUPPLIED THROUGH THE PCA. LOSS OF ALL ESSENTIAL BUS POWER TO THESE LOADS WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AM14H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5558 ABORT: 3/1R

ITEM: FUSE, 10A TO FPCA-2 & FLCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 10A TO FPCA-2 & FLCA-2

4)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F7

PART NUMBER: ME451-0009-1005

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF POWER TO CONTROL ONE AC BUS INVERTER SET. LOSS OF ALL INVERTER SETS CONTROL COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL AC POWER GENERATION.

REFERENCES: 76AM13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5559 ABORT: 3/1R

ITEM: FUSE, 10A TO 013 & R15 PANELS

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 10A TO 013 & R15 PANELS

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A32F10

PART NUMBER: ME451-0009-1005

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO C & W PANEL AND ONE AC BUS SENSOR SWITCH. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AM12H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT:

MDAC ID: 5560

FUSE, 7.5A ITEM: FAILURE MODE: FAILS OPEN

SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) FUSE, 7.5A
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

40V76A32F4 LOCATION:

PART NUMBER: ME451-0009-1019

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO PANELS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AM11H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5561 MDAC ID: RESISTOR, 5.1K 1/4W (TO ESS 2CA MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 2CA MAIN DC DIST ASSY #2 2) RESISTOR, 5.1K 1/4W (TO ESS 2CA MONITOR) 3) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A32R1
PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED TO TEST THE ESSENTIAL BUS 2CA. THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS ALTERNATE TEST MEASUREMENTS ARE AVAILABLE TO THE CREW,

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 EPD&C FLIGHT: 3/3 SUBSYSTEM: ABORT: 3/3 MDAC ID: 5562 RESISTOR, 5.1K (ESS BUS 2CA TEST POINT) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 2CA MAIN DC DIST ASSY #2 2) 4) RESISTOR, 5.1K (ESS BUS 2CA TEST POINT) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23A1R15 PART NUMBER: RLR07C512GR (?) CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED IN A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76AM12C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5563 ABORT: 3/3

ITEM: HYBRID DRIVER TYPE I (ESS BUS 2CA)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLIGHT TEST BUS #2
- 3) APCA-5
- 4) ALCA-2
- 5) HYBRID DRIVER TYPE I (ESS BUS 2CA)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A122AR189
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND CHECKOUT ONLY. NO EFFECT ON FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C MDAC ID: 3/3 5564 ABORT: ITEM: HYBRID DRIVER TYPE I (ESS BUS 2CA) FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) APCA-5 ALCA-2 4) 5) HYBRID DRIVER TYPE I (ESS BUS 2CA) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A122AR189
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND CHECKOUT ONLY. NO EFFECT ON FLIGHT OPERATIONS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5565 ABORT: 3/3

ITEM: RPC, 15A (TO ESS BUS 2CA)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLIGHT TEST BUS #2
- 3) APCA-5
- 4) RPC, 15A (TO ESS BUS 2CA)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | · |
| | 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135RPC3 PART NUMBER: MC450-0017-2150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GSE C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5566 RPC, 15A (TO ESS BUS 2CA) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) APCA-5 4) RPC, 15A (TO ESS BUS 2CA) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: 3/3 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 55V76A135RPC3 PART NUMBER: MC450-0017-2150 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS ITEM IS USED FOR GSE C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5567 DIODE, ISOLATION 35A (TO ESS BUS 2CA) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: PRE-FLIGHT TEST BUS #2 2) APCA-5 DIODE, ISOLATION 35A (TO ESS BUS 2CA) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5568 DIODE, ISOLATION 35A (TO ESS BUS 2CA) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: PRE-FLIGHT TEST BUS #2 1) 2) APCA-5 3) DIODE, ISOLATION 35A (TO ESS BUS 2CA) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 55V76A135CR1 PART NUMBER: JANTXIN1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE:

REFERENCES: 76AM16D

DURING FLIGHT.

THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5569 DIODE, ISOLATION 35A (TO ESS BUS 2CA) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: PRE-FLIGHT TEST BUS #2 APCA-5 2) DIODE, ISOLATION 35A (TO ESS BUS 2CA) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 55V76A135CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5570 ABORT: 3/3 DIODE, ISOLATION 35A (TO ESS BUS 2CA) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) PRE-FLIGHT TEST BUS #2 2) APCA-5 3) DIODE, ISOLATION 35A (TO ESS BUS 2CA) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 55V76A135CR2 PART NUMBER: JANTXIN1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5571 RESISTOR, 5.1K (ESS BUS 2CA VOLTAGE) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) APCA-5 RESISTOR, 5.1K (ESS BUS 2CA VOLTAGE) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 55V76A135A1R1 PART NUMBER: RLR07C512GR (?) CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY. NO EFFECT ON FLIGHT

REFERENCES: 76AM16C

OPERATIONS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5572 ABORT: 3/1R

ITEM: FUSE, 7.5A TO ALCA-2 (MPS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 2CA
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) FUSE, 7.5A TO ALCA-2 (MPS)
- 5) 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/2R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION:

55V76A135F10

PART NUMBER:

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF FOUR SIGNAL SOURCES TO THE LO2 PREVALVE IN ONE ENGINE. LOSS OF ALL REDUNCANCY WOULD POSSIBLY CAUSE LOSS OF THE VALVE WHICH COULD RESULT IN LOSS OF CREW/VEHICLE BY EXPLOSION OR LOSS OF CG MANAGEMENT ON ENTRY.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5573 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO APCA-6)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS CA1
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO APCA-6)

4)

5)

6)

7)

8)

9) 05-6

CRITICALITIES

| 01/T T T 011 T T T T T T T T T T T T T T T | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/3 | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A5R3
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO THE OMS/RCS DC BUS. THE SECOND FAILURE COULD CAUSE LOSS OF THE BUSS. CRITICAL FUNCTIONS ARE PERFORMED OFF OF TWO BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL RCS VALVES.

REFERENCES: 76AM4F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5574 ABORT: 3/1R

ITEM: SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 2/3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) RCS/OMS CA BUS
- 2) CONT BUS CA1
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 2/3)

5) 6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S17
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO ONE OMS/RCS DC BUS. SECOND FAILURE WOULD LOSE THE BUS. LOSS OF ALL RCS/OMS DC BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE IN THE EVENT A CROSSFEED OF PROP IS REQUIRED.

REFERENCES: 76AM4G

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5575 ITEM: SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 2/3) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) RCS/OMS CA BUS 2) CONT BUS CA1 3) MA73C PANEL SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 2/3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] 85V73A129S17 LOCATION: PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AM4G

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

5576

FLIGHT: ABORT:

3/1R 3/1R

ITEM:

RPC, 5A (TO RCS/OMS CA BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) RPC, 5A (TO RCS/OMS CA BUS)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|---------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/3 | TAL: | 3/1R |
| 3/3 | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | - |
| | 3/3 3/3 3/3 3/1R | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 56V76A136RPC23 PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO POWER SOURCES TO THE OMS/RCS BUS. SECOND FAILURE TO OTHER SOURCE WOULD LOSE THE BUS. THIS MAY CAUSE LOSS OF CREW/VEHICLE IN A PROP CROSSFEED SITUATION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5577 RPC, 5A (TO RCS/OMS CA BUS) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) APCA-6 RPC, 5A (TO RCS/OMS CA BUS) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE

HDW/FUNC HDW/FUNC ABORT

3/3 RTLS: 3/3 3/3 TAL: 3/3 AOA: 3/3 3/3 3/3 ATO: 3/3

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136RPC23 PART NUMBER: MC450-0017-1050

PRELAUNCH:

LIFTOFF:

ONORBIT:

DEORBIT:

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 3/1R SUBSYSTEM: EPD&C ABORT: 3/1R MDAC ID: 5578

ITEM: DIODE, 12A (TO RCS/OMS CA BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- AMCA-3 4)
- DIODE, 12A (TO RCS/OMS CA BUS)

7)

8)

05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 56V76A116CR1

PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES TO THE OMS/RCS BUS. NEXT FAILURE TO THAT BUS WOULD CAUSE LOSS OF POWER TO PROP VALVES WHICH MIGHT CAUSE LOSS OF CREW/VEHICLE DURING A CROSSFEED SITUATION.

REFERENCES: 76AM5E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5579 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS CA BUS)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- 4) AMCA-3
- 5) DIODE, 12A (TO RCS/OMS CA BUS)

6) 7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 56V76A116CR1
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON RCS/OMS BUS LOADING. IF THE RPC OPENS, IT WOULD REMOVE ONE SOURCE OF POWER TO TWO OMS/RCS BUSSES. THE NEXT FAILURE COULD CAUSE THE LOSS OF ONE RCS/OMS BUS WHICH MIGHT CAUSE A LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL PROP VALVES DURING A CROSSFEED SITUATION.

REFERENCES: 76AM5E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5580 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS CA BUS)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) AMCA-3
- 5) DIODE, 12A (TO RCS/OMS CA BUS)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 56V76A116CR2
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON RCS/OMS BUS LOADING. IF THE RPC OPENS, IT WOULD REMOVE ONE SOURCE OF POWER TO TWO OMS/RCS BUSSES. THE NEXT FAILURE COULD CAUSE THE LOSS OF ONE RCS/OMS BUS WHICH MIGHT CAUSE A LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL PROP VALVES DURING A CROSSFEED SITUATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5581 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS CA BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) AMCA-3
- 5) DIODE, 12A (TO RCS/OMS CA BUS)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | - 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 56V76A116CR2
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES TO THE OMS/RCS BUS. NEXT FAILURE TO THAT BUS WOULD CAUSE LOSS OF POWER TO PROP VALVES WHICH MIGHT CAUSE LOSS OF CREW/VEHICLE DURING A CROSSFEED SITUATION.

REFERENCES: 76AM6E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5582 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS AB BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) AMCA-1
- 5) DIODE, 12A (TO RCS/OMS AB BUS)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | <u> </u> | | • |

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 54V76A114CR2
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES TO THE OMS/RCS BUS. NEXT FAILURE TO THAT BUS WOULD CAUSE LOSS OF POWER TO PROP VALVES WHICH MIGHT CAUSE LOSS OF CREW/VEHICLE DURING A CROSSFEED SITUATION.

REFERENCES: 76AP6E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5583 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS AB BUS)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) APCA-5
- 4) AMCA-1
- 5) DIODE, 12A (TO RCS/OMS AB BUS)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 54V76A114CR2
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON RCS/OMS BUS LOADING. IF THE RPC OPENS, IT WOULD REMOVE ONE SOURCE OF POWER TO TWO OMS/RCS BUSSES. THE NEXT FAILURE COULD CAUSE THE LOSS OF ONE RCS/OMS BUS WHICH MIGHT CAUSE A LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL PROP VALVES DURING A CROSSFEED SITUATION.

REFERENCES: 76AP6E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5584 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS AB BUS)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- 4) AMCA-1
- 5) DIODE, 12A (TO RCS/OMS AB BUS)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | | | • | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 54V76A114CR1
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:
THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH
MIGHT CAUSE AN RPC FAILURE DEPENDING ON RCS/OMS BUS LOADING. IF
THE RPC OPENS, IT WOULD REMOVE ONE SOURCE OF POWER TO TWO OMS/RCS
BUSSES. THE NEXT FAILURE COULD CAUSE THE LOSS OF ONE
RCS/OMS BUS WHICH MIGHT CAUSE A LOSS OF CREW/VEHICLE DUE TO
INABILITY TO CONTROL PROP VALVES DURING A CROSSFEED SITUATION.

REFERENCES: 76AP3E

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5585 ABORT: 3/1R

ITEM: DIODE, 12A (TO RCS/OMS AB BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) APCA-4
- 4) AMCA-1
- 5) DIODE, 12A (TO RCS/OMS AB BUS)

6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | · |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [PP]

LOCATION: 54V76A114CR1
PART NUMBER: JANTXV1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO SOURCES TO THE OMS/RCS BUS. NEXT FAILURE TO THAT BUS WOULD CAUSE LOSS OF POWER TO PROP VALVES WHICH MIGHT CAUSE LOSS OF CREW/VEHICLE DURING A CROSSFEED SITUATION.

REFERENCES: 76AP3E

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 3/1R

MDAC ID:

5586

ABORT:

3/1R

ITEM:

RPC, 5A (TO RCS/OMS AB BUS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- APCA-4
- RPC, 5A (TO RCS/OMS AB BUS) 4)

5)

6)

7) 8)

05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/3 | TAL: | 3/1R | |
| ONORBIT: | 3/3 | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | • | | · | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 54V76A134RPC23

PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE OF TWO POWER SOURCES TO THE OMS/RCS BUS. SECOND FAILURE TO OTHER SOURCE WOULD LOSE THE BUS. THIS MAY CAUSE LOSS OF CREW/VEHICLE IN A PROP CROSSFEED SITUATION.

REFERENCES: 76AP6G

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5587 MDAC ID: RPC, 5A (TO RCS/OMS AB BUS) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 3) APCA-4 RPC, 5A (TO RCS/OMS AB BUS) 4) 5) 6) 7) 8)

| | CRITICALITIES | | |
|----------------|---------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 54V76A134RPC23
PART NUMBER: MC450-0017-1050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

9)

05-6

NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AP6G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5588 ABORT: 3/1R

ITEM: SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) RCS/OMS AB BUS
- 2) CONT BUS AB3
- 3) MA73C PANEL
- 4) SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/3)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | • | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129S15
PART NUMBER: ME452-0102-7101

CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION,

MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO ONE OMS/RCS DC BUS. SECOND FAILURE WOULD LOSE THE BUS. LOSS OF ALL RCS/OMS DC BUSSES WOULD CAUSE LOSS OF CREW/VEHICLE IN THE EVENT A CROSSFEED OF PROP IS REQUIRED.

REFERENCES: 76AP4F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5589 SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/3) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) RCS/OMS AB BUS 2) CONT BUS AB3 3) MA73C PANEL SWITCH, TOGGLE SPST (AFT POD VLV LOGIC GRP 1/3) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 85V73A129S15 PART NUMBER: ME452-0102-7101 CAUSES: CONTAMINATION, PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT

REFERENCES: 76AP4F

CONFIGURATION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/1R FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/1R MDAC ID: 5590

RESISTOR, 1.2K 2W (TO APCA-4) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS AB3
- 2) MA73C PANEL
- 3) RESISTOR, 1.2K 2W (TO APCA-4)

4) 5)

6)

7)

8)

05-6 9)

CRITICALITIES

| V1/2 2 2 V1.22 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | | |
|--|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/3 | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 85V73A129A5R1 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO THE OMS/RCS DC BUS. THE SECOND FAILURE COULD CAUSE LOSS OF THE BUSS. CRITICAL FUNCTIONS ARE PERFORMED OFF OF TWO BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL RCS VALVES.

REFERENCES: 76AP4F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5591 RESISTOR, 5.1K (ESS BUS 3AB TEST POINT) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB MAIN DC DIST ASSY #3 2) 3) FPCA-3 RESISTOR, 5.1K (ESS BUS 3AB TEST POINT) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES

| | O1/2 2 2 O1/ | | |
|-----------------|--------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 83V76A24A1R12
PART NUMBER: RLR07C512GR (?)

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED IN A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT ON CREW/MISSION/VEHICLE.

REFERENCES: 76AP12C

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5592 RESISTOR, 5.1K 1/4W (TO ESS 3AB MONITOR) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB 2) MAIN DC DIST ASSY #3 3) RESISTOR, 5.1K 1/4W (TO ESS 3AB MONITOR) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: 3/3 LIFTOFF: ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33R1 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED TO TEST THE ESSENTIAL BUS 2CA. THIS FAILURE WOULD HAVE NO EFFECT ON CREW/MISSION/VEHICLE AS ALTERNATE TEST MEASUREMENTS ARE AVAILABLE TO THE CREW,

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5593 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (ESS BUS 3AB)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #3
- 2) MAIN DC DIST ASSY #3
- 3) RIAL PANEL
- 4) DIODE, ISOLATION 35A (ESS BUS 3AB)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC |
|----------|
| 3/1R |
| 3/1R |
| 3/1R |
| 3/1R |
| • |
| |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33CR1
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LOSE CRITICAL LOADS AND CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5594 DIODE, ISOLATION 35A (ESS BUS 3AB) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #3 2) MAIN DC DIST ASSY #3 RIAI PANEL DIODE, ISOLATION 35A (ESS BUS 3AB) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33CR1 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS ANOTHER ISOLATION DIODE IN SERIES WOULD BLOCK REVERSE CURRENT.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5595 DIODE, ISOLATION 35A (ESS BUS 3AB) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 3) MPCA-1 DIODE, ISOLATION 35A (ESS BUS 3AB) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33CR2 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS AN RPC IN SERIES WOULD BLOCK

REVERSE CURRENT UP TO 12 AMPS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5596 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (ESS BUS 3AB)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) DIODE, ISOLATION 35A (ESS BUS 3AB)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LOSE CRITICAL LOADS AND CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5597 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (ESS BUS 3AB)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) DIODE, ISOLATION 35A (ESS BUS 3AB)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| VI | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33CR3
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LOSE CRITICAL LOADS AND CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5598 MDAC ID: DIODE, ISOLATION 35A (ESS BUS 3AB) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) MPCA-2 4) DIODE, ISOLATION 35A (ESS BUS 3AB) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A33CR3
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT AS AN RPC IN SERIES WOULD BLOCK REVERSE CURRENT UP TO 12 AMPS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5599 DIODE, ISOLATION 35A (TO RIAL PANEL - ESS BUS 3AB) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) FUEL CELL #3 MAIN DC DIST ASSY #3 DIODE, ISOLATION 35A (TO R1A1 PANEL - ESS BUS 3AB) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33CR4 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS ANOTHER ISOLATION DIODE IN SERIES WOULD BLOCK REVERSE CURRENT.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5600 ABORT: 3/1R

ITEM: DIODE, ISOLATION 35A (TO R1A1 PANEL - ESS BUS 3AB)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #3
- 2) MAIN DC DIST ASSY #3
- 3) DIODE, ISOLATION 35A (TO RIAL PANEL ESS BUS 3AB)

4) 5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33CR4
PART NUMBER: JANTXIN1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

NO EFFECT ON FIRST FAILURE AS TWO OTHER SOURCES FOR THE ESS BUS EXIST. NOT READILY DETECTABLE IF ANOTHER SOURCE IS POWERING THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LOSE CRITICAL LOADS AND CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5601 ABORT: 3/1R

ITEM: FUSE, 10A TO ESS BUS 3AB

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #3
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 10A TO ESS BUS 3AB

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F29
PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE PATH FROM THE FUEL CELL TO THE ESSENTIAL BUS. REDUNDANT PATH AND POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO ESSENTIAL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5602 ABORT: 3/1R

ITEM: FUSE, 10A TO ESS BUS 3AB

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) FUEL CELL #3
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 10A TO ESS BUS 3AB
- 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F30
PART NUMBER: ME451-0009-5100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE PATH FROM THE FUEL CELL TO THE ESSENTIAL BUS. REDUNDANT PATH AND POWER SOURCES ARE AVAILABLE. LOSS OF ALL POWER TO ESSENTIAL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R

MDAC ID: 5603 ABORT: 2/1R

ITEM: FUSE, 7.5A FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 7.5A
- 4)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| 7.12 2 2 71.22 2 227 | | | |
|----------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33F2

PART NUMBER: ME451-0009-1019

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO PANELS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

SECOND FAILURE WOULD CAUSE THE LOSS OF THE BACKUP GPC USED BY THE BFS WHICH COULD LEAD TO LOSS OF CREW/VEHICLE IF BFS WERE REQUIRED..

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5604 FUSE, 3A TO SIG COND/MDM MONITOR ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB MAIN DC DIST ASSY #3 3) FUSE, 3A TO SIG COND/MDM MONITOR 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 3/3 ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33F1 PART NUMBER: MC451-0009-1003 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS FAILURE WOULD CAUSE THE LOSS OF A NON-CRITICAL MEASUREMENT CIRCUIT. ALTERNATE MONITORS AND INDICATORS ARE AVAILABLE TO THE CREW. REFERENCES: 76AP17A

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5605 ABORT: 3/1R

ITEM: FUSE, 15A TO APCA-6

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 15A TO APCA-6
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F8

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE SOURCE OF POWER TO CRITICAL LOADS SUPPLIED THROUGH THE PCA. LOSS OF ALL ESSENTIAL BUS POWER TO THESE LOADS WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5606 FUSE, 5A ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB 2) MAIN DC DIST ASSY #3 3) FUSE, 5A TO H2/02 CONT BOX #3 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A33F5 PART NUMBER: ME451-0009-1021 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: NO LOADS CONNECTED TO THIS FUSE. REFERENCES: 76AP15H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5607 ABORT: 3/1R

ITEM: FUSE, 10A TO ML86B PANEL

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 10A TO ML86B PANEL

4)

5)

6)

7)

8)

9) 05-6

CRITICALITIES

| 71/1 1 TILL 1 TILL | | | |
|--------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A33F9

PART NUMBER: ME451-0009-5100 (?1005)

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF REDUNDANT POWER TO CRYO LOADS. LOSS OF ALL POWER TO CRYO LOADS COULD CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AP15H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5608 ABORT: 3/1R

ITEM: FUSE, 15A TO MPCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 15A TO MPCA-3
- 4)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F3

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE SOURCE OF POWER TO CRITICAL LOADS SUPPLIED THROUGH THE PCA. LOSS OF ALL ESSENTIAL BUS POWER TO THESE LOADS WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE.

REFERENCES: 76AP14H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5609 ABORT: 3/1R

ITEM: FUSE, 10A TO FPCA-3 & FLCA-3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 10A TO FPCA-3 & FLCA-3

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F7

PART NUMBER: ME451-0009-1005

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF POWER TO CONTROL ONE AC BUS INVERTER SET. LOSS OF ALL INVERTER SETS CONTROL COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL AC POWER GENERATION.

REFERENCES: 76AP13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5610 ABORT: 3/1R

ITEM: FUSE, 10A TO 013 PANEL

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) FUSE, 10A TO 013 PANEL
- 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 40V76A33F10

PART NUMBER: ME451-0009-1005

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO C & W PANEL AND ONE AC BUS SENSOR SWITCH. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER AND CONTROL CRITICAL LOADS.

REFERENCES: 76AM12H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 2/1R SUBSYSTEM: EPD&C 2/1R ABORT:

MDAC ID: 5611

FUSE, 7.5A ITEM: FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- MAIN DC DIST ASSY #3
- 3) FUSE, 7.5A

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 2/1R |
| LIFTOFF: | 2/1R | TAL: | 2/1R |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 2/1R | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

40V76A33F4

PART NUMBER: ME451-0009-1019

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDANT POWER TO PANELS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

SECOND FAILURE WOULD CAUSE THE LOSS OF THE BACKUP GPC USED BY THE BFS WHICH COULD LEAD TO LOSS OF CREW/VEHICLE IF BFS WERE REQUIRED..

REFERENCES: 76AP11H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5612 ABORT: 3/3

ITEM: HYBRID DRIVER TYPE I (ESS BUS 3AB)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLIGHT TEST BUS #2
- 3) APCA-6
- 4) ALCA-3
- 5) HYBRID DRIVER TYPE I (ESS BUS 3AB)

6) 7) 8)

9) 05-6

CRITICALITIES

| 74/2 2 2 2 2 2 2 2 2 | | | |
|----------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A123AR189
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND CHECKOUT ONLY. NO EFFECT ON FLIGHT OPERATIONS.

REFERENCES: 76AP16F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5613 ABORT: 3/3

ITEM: HYBRID DRIVER TYPE I (ESS BUS 3AB)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLIGHT TEST BUS #2
- 3) APCA-6
- 4) ALCA-3
- 5) HYBRID DRIVER TYPE I (ESS BUS 3AB)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | · | |
| | | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A123AR189
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND CHECKOUT ONLY. NO EFFECT ON FLIGHT OPERATIONS.

REFERENCES: 76AP16F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5614 RPC, 15A (TO ESS BUS 3AB) ITEM: FAILURE MODE: FAILS ON SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) APCA-6 4) RPC, 15A (TO ESS BUS 3AB)

7) 8) 9) 05-6

5) 6)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136RPC3
PART NUMBER: MC450-0017-2150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GSE C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AP16D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5615 ITEM: RPC, 15A (TO ESS BUS 3AB) FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) APCA-6 RPC, 15A (TO ESS BUS 3AB) 4) 5)

CRITICALITIES

| | CITTICALITIES | | |
|----------------|---------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136RPC3 PART NUMBER: MC450-0017-2150

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

6) 7) 8) 9)

05-6

THIS ITEM IS USED FOR GSE C/O ONLY AND IS NOT CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AP16D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5616 DIODE, ISOLATION 35A (TO ESS BUS 3AB) ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) PRE-FLIGHT TEST BUS #2 2) APCA-6 3) DIODE, ISOLATION 35A (TO ESS BUS 3AB) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 56V76A136CR1 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

REFERENCES: 76AP16D

HIGHEST CRITICALITY HDW/FUNC 'DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5617 DIODE, ISOLATION 35A (TO ESS BUS 3AB) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: PRE-FLIGHT TEST BUS #2 1) 2) APCA-6 DIODE, ISOLATION 35A (TO ESS BUS 3AB) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: RTLS: 3/3 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 B [] REDUNDANCY SCREENS: A [] C r 1 LOCATION: 56V76A136CR1 PART NUMBER: JANTX1N1188R CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED

REFERENCES: 76AP16D

DURING FLIGHT.

| DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5618 ABORT: 3/3 | | | |
|---|--|--|--|
| ITEM: DIODE, ISOLATION 35A (TO ESS BUS 3AB) FAILURE MODE: FAILS OPEN | | | |
| LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER | | | |
| BREAKDOWN HIERARCHY: 1) PRE-FLIGHT TEST BUS #2 2) APCA-6 3) DIODE, ISOLATION 35A (TO ESS BUS 3AB) 4) 5) 6) 7) 8) | | | |
| 9) 05-6 | | | |
| CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC | | | |
| FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 | | | |
| LIFTOFF: 3/3 TAL: 3/3 | | | |
| ONORBIT: 3/3 AOA: 3/3 | | | |
| DEORBIT: 3/3 ATO: 3/3 | | | |
| LANDING/SAFING: 3/3 | | | |
| REDUNDANCY SCREENS: A [] B [] C [] | | | |
| LOCATION: 56V76A136CR2 PART NUMBER: JANTX1N1188R | | | |
| CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK | | | |
| EFFECTS/RATIONALE: THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT. | | | |

REFERENCES: 76AP16D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5619 DIODE, ISOLATION 35A (TO ESS BUS 3AB) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) PRE-FLIGHT TEST BUS #2 APCA-6 2) DIODE, ISOLATION 35A (TO ESS BUS 3AB) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 56V76A136CR2
PART NUMBER: JANTX1N1188R

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS USED DURING GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT.

REFERENCES: 76AP16D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5620 ITEM: RESISTOR, 5.1K FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 4) RESISTOR, 5.1K (ESS BUS 2CA VOLTAGE) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 PRELAUNCH: RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 56V76A136A1R22 PART NUMBER: RLR07C512GR (?) CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY. NO EFFECT ON FLIGHT OPERATIONS.

REFERENCES: 76AP16C

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5621 ABORT: 3/1R

ITEM: FUSE, 7.5A TO ALCA-3 (MPS)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) MAIN DC DIST ASSY #3
- 3) APCA-6
- 4) FUSE, 7.5A TO ALCA-3 (MPS)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| V-1 | | |
|----------|----------------------|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/2R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | · |
| | 3/1R 3/2R 3/1R | 3/3 RTLS: 3/1R TAL: 3/2R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 56V76A136F10

PART NUMBER:

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE OF FOUR SIGNAL SOURCES TO THE LO2 PREVALVE IN ONE ENGINE. LOSS OF ALL REDUNDANCY WOULD LOSE THE VALVE WHICH COULD RESULT IN LOSS OF CREW/VEHICLE BY EXPLOSION OR LOSS OF CG MANAGEMENT ON ENTRY.

REFERENCES: 76AP16C

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

FLIGHT:

SUBSYSTEM: MDAC ID:

EPD&C 5622

3/1R 3/1R ABORT:

ITEM:

SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- RIAI PANEL 2)
- 3) MAIN DC DIST ASSY #3
- SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 3)

5) 6)

7)

8) 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | ÷ - |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

32V73A1A1S9

PART NUMBER: ME452-0102-7303

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE REDUNDANT POWER SOURCE TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY WOULD CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS. IF THE BFS WERE REQUIRED AND THIS BUS WAS LOST, LOSS OF CREW/VEHICLE WOULD RESULT.

REFERENCES: 76AP19F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5623 SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 3) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB RIAI PANEL 2) MAIN DC DIST ASSY #3 3) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE F/C 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: **32V73A1A1S9** PART NUMBER: ME452-0102-7303 CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION EFFECTS/RATIONALE: NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AP19F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5624 RESISTOR, 5.1K 1/4W TO MDM OF4 ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB 2) MAIN DC DIST ASSY #3 3) RIAI PANEL 4) RESISTOR, 5.1K 1/4W TO MDM OF4 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 LIFTOFF: AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1A9R1 PART NUMBER: RLR07C512GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT

REFERENCES: 76AP20G

ON CREW/VEHICLE/MISSION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5625 MDAC ID: RESISTOR, 5.1K 1/4W TO MDM OF4 ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B MAIN DC DIST ASSY #2 2) RIA1 PANEL 3) RESISTOR, 5.1K 1/4W TO MDM OF4 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT 3/3 PRELAUNCH: 3/3 RTLS: 3/3 TAL: LIFTOFF: 3/3 AOA: ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [LOCATION: 32V73A1A1A6R3 PART NUMBER: RLR07C512GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A NON-CRITICAL MEASUREMENT CIRCUIT. NO EFFECT

ON CREW/VEHICLE/MISSION.

REFERENCES: 76AP18F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5626 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO ESS BUS 3AB)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIA1 PANEL
- 4) RESISTOR, 1.2K 2W (TO ESS BUS 3AB)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1A6R2 PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF MANUAL CONTROL TO CONNECT ONE MAIN DC BUS TO THE ESSENTIAL BUS. REDUNDANT POWER IS AVAILABLE.

CREW/VEHICLE LOSS IS CERTAIN IF ALL POWER TO ESS BUSSES IS LOST DUE TO THE INABILITY TO POWER ALL CRITICAL LOADS.

REFERENCES: 76AP24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5627 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO ESS BUS 3AB)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAI PANEL
- 4) RESISTOR, 1.2K 2W (TO ESS BUS 3AB)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | 42/2 2 2 44 | | |
|----------------|-------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | - |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1A6R1
PART NUMBER: RWR80S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF MANUAL CONTROL TO CONNECT ONE MAIN DC BUS TO THE ESSENTIAL BUS. REDUNDANT POWER IS AVAILABLE.

CREW/VEHICLE LOSS IS CERTAIN IF ALL POWER TO ESS BUSSES IS LOST DUE TO THE INABILITY TO POWER ALL CRITICAL LOADS.

REFERENCES: 76AP21H

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5628

ABORT:

3/1R

ITEM:

SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN A/B)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- RIA1 PANEL 2)
- 3) MAIN DC DIST ASSY #1 & #2
- SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN A/B) 4)

5) 6)

7) 8)

05-6 9)

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|---|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A1A1S6

PART NUMBER: ME452-0102-7301

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF MANUAL CONTROL TO CONNECT MAIN DC BUS POWER TO ESSENTIAL BUS. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

IF THE BFS WERE REQUIRED, THE LOSS OF ESSENTIAL BUS 3AB WOULD CAUSE THE LOSS OF CREW/VEHICLE.

REFERENCES: 76AP24H,21H,11F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5629 ABORT: 3/3

ITEM: SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN A/B)

FAILURE MODE: FAILS CLOSED

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) ESS BUS 3AB
- 2) RIAI PANEL
- 3) MAIN DC DIST ASSY #1 & #2
- 4) SWITCH, TOGGLE 3PDT (ESS BUS SOURCE MAIN A/B)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | V-1 | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 32V73A1A1S6
PART NUMBER: ME452-0102-7301

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK,

CONTAMINATION

EFFECTS/RATIONALE:

NO EFFECT AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AP24H,21H,11F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5630 DIODE, ISOLATION (TO MPCA-1 - ESS BUS 3AB) ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 3) RIAI PANEL 4) DIODE, ISOLATION (TO MPCA-1 - ESS BUS 3AB) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A1CR1 PART NUMBER: JANTXV1N4246 CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS DIODE IS USED FOR ISOLATION BETWEEN THE VEHICLE AND GROUND CIRCUITS AND IS NON-CRITICAL DURING FLIGHT OPERATIONS.

REFERENCES: 76AP24B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: SUBSYSTEM: EPD&C 3/1R

ABORT: 5631 MDAC ID:

DIODE, ISOLATION (TO MPCA-1 - ESS BUS 3AB) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- RIA1 PANEL
- DIODE, ISOLATION (TO MPCA-1 ESS BUS 3AB) 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | V-1 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | - |
| | | | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A25A1CR1 PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE TO THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AP24B

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5632 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|---|
| ITEM: DIODE, BLOCKING FAILURE MODE: FAILS OPEN | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) ESS BUS 3AB - GROUND C/O 2) MDM LF1 3) DIODE, BLOCKING 4) 5) 6) 7) 8) | |
| 9) 05-6 | |
| | CALITIES |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| REDUNDANCY SCREENS: A [] | B[] [C[] |
| LOCATION: 40V76A25A1CR2 PART NUMBER: JANTXV1N4246 | |
| CAUSES: CONTAMINATION, THERMAL S | TRESS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS ITEM IS ONLY USED DURING GRO FLIGHT. | OUND C/O AND IS NOT CRITICAL FOR |
| REFERENCES: 76AP23B | |

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5633 DIODE, BLOCKING ITEM: FAILURE MODE: SHORTS SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB - GROUND C/O 2) MDM LF1 DIODE, BLOCKING 3) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A1CR2 PART NUMBER: JANTXV1N4246 CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS ONLY USED DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT.

REFERENCES: 76AP23B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5634 RESISTOR, 2.2K 1/2W (TO MDM OF1) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 3) MPCA-1 RESISTOR, 2.2K 1/2W (TO MDM OF1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25A1R2 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76AP22B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5635 MDAC ID: RESISTOR, 1.8K 1/4W (TO MDM OF1) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 2) 3) MPCA-1 RESISTOR, 1.8K 1/4W (TO MDM OF1) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25A1R1
PART NUMBER: RLR07C182GR

LANDING/SAFING: 3/3

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76AP22B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5636 ABORT: 3/1R

ITEM: RPC, 10A TO MDCA #3 - ESS BUS 3AB

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 10A TO MDCA #3 ESS BUS 3AB

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A25RPC1

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE POWER PATH TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AP23B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5637 ABORT: 3/3

ITEM: RPC, 10A TO MDCA #3 - ESS BUS 3AB

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) MPCA-1
- 4) RPC, 10A TO MDCA #3 ESS BUS 3AB
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| 01/11/41/41 | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A25RPC1

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD RESULT IN THE INABILITY TO DISCONNECT THE MAIN DC BUS FROM THE ESSENTIAL BUS. THIS IS NOT A PROBLEM BECAUSE THE MAIN DC BUS IS NORMALLY CONNECTED TO THE ESSENTIAL BUS DURING FLIGHT.

REFERENCES: 76AP23B

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5638 ABORT: 3/1R

ITEM: RPC, 10A TO MDCA #3 - ESS BUS 3AB

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 10A TO MDCA #3 ESS BUS 3AB

5) 6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 40V76A26RPC2

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF ONE POWER PATH TO THE ESSENTIAL BUS. LOSS OF ALL REDUNDANCY MAY CAUSE LOSS OF CREW/VEHICLE DUE TO LOSS OF POWER TO CRITICAL LOADS.

REFERENCES: 76AP21D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3

MDAC ID: 5639 ABORT: 3/3

ITEM: RPC, 10A TO MDCA #3 - ESS BUS 3AB

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) MPCA-2
- 4) RPC, 10A TO MDCA #3 ESS BUS 3AB
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26RPC2

PART NUMBER: MC450-0017-2100 (?-1100)

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD RESULT IN THE INABILITY TO DISCONNECT THE MAIN DC BUS FROM THE ESSENTIAL BUS. THIS IS NOT A PROBLEM BECAUSE THE MAIN DC BUS IS NORMALLY CONNECTED TO THE ESSENTIAL BUS DURING FLIGHT.

REFERENCES: 76AP21D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 MDAC ID: 5640 ABORT: RESISTOR, 1.8K 1/4W (TO MDM OF2) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 4) RESISTOR, 1.8K 1/4W (TO MDM OF2) 6) 7) 8) 9) 05-6 CRITICALITIES

FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC
PRELAUNCH: 3/3 RTLS: 3/3
TTEMORE: 3/3 TAL: 3/3 AOA: 3/3 3/3 ONORBIT: DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A1R3 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5641 MDAC ID: RESISTOR, 2.2K 1/2W (TO MDM OF2) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: MAIN DC BUS B 1) MAIN DC DIST ASSY #2 2) MPCA-2 3) RESISTOR, 2.2K 1/2W (TO MDM OF2) 4) 5) 6) 7) 8) 9) 05-6

CRITICALITIES

| | CVTITCU | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A1R4
PART NUMBER: RLR20C222GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES: 76AP20C

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5642 | | HIGHEST C | RITICALITY FLIGHT: ABORT: | HDW/FUNC 3/3 3/3 |
|--|-------------------|-----------|---------------------------|------------------------|
| ITEM: DIODE, BL FAILURE MODE: FAILS OPE | | | | |
| LEAD ANALYST: K. SCHMECK | PEPER | SUBSYS LE | AD: K. SCHM | ECKPEPER |
| BREAKDOWN HIERARCHY: 1) ESS BUS 3AB - GROUN 2) MDM LF1 3) DIODE, BLOCKING 4) 5) 6) 7) 8) | D C/O | e sta | | |
| 9) 05-6 | | | | |
| | CRITICALI | TIES | | |
| FLIGHT PHASE HD | | | HDW/FUNG | 2 |
| PRELAUNCH: | 3/3 | RTLS | : 3/3 | |
| LIFTOFF: | 3/3 3/3 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | | |
| DEORBIT: | 3/3 | ATO: | | |
| LANDING/SAFING: | 3/3 | | -, - | |
| REDUNDANCY SCREENS: A | [] B | [] | c [] | |
| LOCATION: 40V76A26A1 PART NUMBER: JANTXV1N42 | | | | |
| CAUSES: CONTAMINATION, | THERMAL STRE | ss, VIBRA | TION, MECH S | ЭНОСК |
| EFFECTS/RATIONALE: THIS ITEM IS ONLY USED D' FLIGHT. | URING GROUNI | C/O AND | IS NOT CRITI | |
| | | | | |

REFERENCES: 76AP22D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5643 MDAC ID: DIODE, BLOCKING ITEM: FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) ESS BUS 3AB - GROUND C/O 2) MDM LF1 3) DIODE, BLOCKING 4) 5) 6)

7) 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | - |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26A1CR4
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM IS ONLY USED DURING GROUND C/O AND IS NOT CRITICAL FOR FLIGHT.

REFERENCES: 76AP22D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5644 ABORT: 3/3 ITEM: DIODE, ISOLATION (TO MPCA-2 - ESS BUS 3AB) FAILURE MODE: SHORTS LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) RIAL PANEL 4) DIODE, ISOLATION (TO MPCA-2 - ESS BUS 3AB) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26A1CR3 PART NUMBER: JANTXV1N4246 CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS DIODE IS USED FOR ISOLATION BETWEEN THE VEHICLE AND GROUND CIRCUITS AND IS NON-CRITICAL DURING FLIGHT OPERATIONS. REFERENCES: 76AP21D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5645 ABORT: 3/1R

ITEM: DIODE, ISOLATION (TO MPCA-2 - ESS BUS 3AB)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAI PANEL
- 4) DIODE, ISOLATION (TO MPCA-2 ESS BUS 3AB)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | U1122U1 | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [2] B [P] C [P]

LOCATION: 40V76A26A1CR3
PART NUMBER: JANTXV1N4246

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE SOURCE TO THE ESS BUS. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AP21D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5646 ITEM: FUSE, 3A TO GSE MONITOR FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #2 3) APCA - 5 4) FUSE, 3A TO GSE MONITOR 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 3/3 PRELAUNCH: RTLS: 3/3 LIFTOFF: 3/3 TAL: AOA: ONORBIT: 3/3 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 55V76A135F9 PART NUMBER: ME451-0009-1003 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

REFERENCES: 76AS22G

DURING FLIGHT OPERATIONS.

EFFECTS/RATIONALE:

THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT POWERED

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5647 FUSE, 10A TO ALCA-2 ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE 2) PRE-FLIGHT TEST BUS #2 3) APCA-5 4) FUSE, 10A TO ALCA-2 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 3/3 AOA: ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 C [] REDUNDANCY SCREENS: A [] B []

LOCATION: 55V76A135F7

PART NUMBER: ME451-0009-1005

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS ITEM IS USED DURING GROUND C/O ONLY AND HAS NO EFFECT ON FLIGHT OPERATIONS.

REFERENCES: 76AS22G

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5648 FUSE, 5A ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) MPCA-2 4) FUSE, 5A 5) 6) 7) 8) 05-6 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 3/3 LIFTOFF: TAL: AOA: ONORBIT: 3/3 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A26F11 PART NUMBER: ME451-0009-1021 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS ITEM IS USE FOR GROUND C/O ONLY AND IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AS18G

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5649 MDAC ID: ITEM: FUSE, 15A FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) MPCA-2 4) FUSE, 15A 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE ABORT HDW/FUNC HDW/FUNC 3/3 RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 40V76A26F9

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS ITEM IS USE FOR GROUND C/O ONLY AND IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AS16H

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5650 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|---|
| ITEM: FUSE, 5A FAILURE MODE: FAILS OPEN | |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) FPCA-2 4) FUSE, 5A 5) 6) 7) | |
| 8) 9) 05-6 | |
| CRITICA | ALITIES |
| | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| REDUNDANCY SCREENS: A [] | B[] C[] |
| LOCATION: 82V76A23F19 PART NUMBER: ME451-0009-1021 | |
| CAUSES: CONTAMINATION, VIBRATION, | MECH SHOCK, THERMAL STRESS |
| EFFECTS/RATIONALE: THIS ITEM IS USE FOR GROUND C/O ON FLIGHT OPERATIONS. | ILY AND IS NON-CRITICAL FOR |
| REFERENCES: 76AS8H | |

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5651 ITEM: FUSE, 5A FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) FPCA-3 FUSE, 5A 4) 5) 6) 7) 8) 9) 05-6

CRITTCALITTES

| CVTTTCU | | |
|----------|--------------------------------------|---|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| : 3/3 | | |
| | HDW/FUNC 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

83V76A24F10 LOCATION: PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS ITEM IS USE FOR GROUND C/O ONLY AND IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AS7D

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5652 | | | TICALITY LIGHT: BORT: | HDW/FUNC 3/3 3/3 |
|--|--------------------------------------|-------------|-------------------------------------|------------------------|
| ITEM: FUSE, 5 FAILURE MODE: FAILS O | | | | |
| LEAD ANALYST: K. SCHME | CKPEPER | SUBSYS LEAD | : K. SCHM | ECKPEPER |
| BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST B 3) FPCA-1 4) FUSE, 5A 5) 6) 7) | US #1 | | | |
| 8) 9) 05-6 | | | | |
| · | CRITICAL | TIES | | |
| FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING: | HDW/FUNC 3/3 3/3 3/3 3/3 | | HDW/FUN 3/3 3/3 3/3 3/3 | c |
| REDUNDANCY SCREENS: | A [] E | 3 [] | c [] | |
| LOCATION: 81V76A22 PART NUMBER: ME451-00 | | | | |
| CAUSES: CONTAMINATION | , VIBRATION, M | ECH SHOCK, | THERMAL S' | TRESS |
| EFFECTS/RATIONALE: THIS ITEM IS USE FOR G FLIGHT OPERATIONS. | ROUND C/O ONLY | AND IS NON- | CRITICAL | FOR |

REFERENCES: 76AS4C

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5653 MDAC ID: FUSE, 15A ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 1) PRE-FLIGHT TEST BUS #1 2) 3) MPCA-1 FUSE, 15A 4) 5) 6) 7) 8) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 40V76A25F9

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS ITEM IS USE FOR GROUND C/O ONLY AND IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AS11C

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5654 | | F | ricality hdw/fund Light: 3/3 BORT: 3/3 |
|--|----------------|---------------|--|
| ITEM: FUSE, FAILURE MODE: FAILS | | | |
| LEAD ANALYST: K. SCHM | ECKPEPER | SUBSYS LEAD | K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST 1 3) MPCA-1 4) FUSE, 5A 5) 6) 7) 8) | BUS #1 | | |
| 9) 05-6 | | | |
| | CRITICALI | | |
| FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: LANDING/SAFING | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: TAL: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |
| REDUNDANCY SCREENS: | A [] B | [] | c [] |
| LOCATION: 40V76A25 PART NUMBER: ME451-00 | | | |
| CAUSES: CONTAMINATION | , VIBRATION, M | есн ѕноск, т | HERMAL STRESS |
| EFFECTS/RATIONALE: THIS ITEM IS USE FOR G FLIGHT OPERATIONS. | ROUND C/O ONLY | AND IS NON- | CRITICAL FOR |
| | | | |

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5655 ITEM: FUSE, 15A FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) MPCA-3 4) FUSE, 15A 5) 6) 7)

CRITTCALITTES

| CULTICALITIES | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION:

8) 9)

05-6

40V76A27F9

PART NUMBER: ME451-0009-1006

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS ITEM IS USE FOR GROUND C/O ONLY AND IS NON-CRITICAL FOR FLIGHT OPERATIONS.

REFERENCES: 76AS16E

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5656 | | | CCALITY HDW/FUNG IGHT: 3/3 DRT: 3/3 |
|--|-----------------------|----------------|---|
| ITEM: FUSE, FAILURE MODE: FAILS | 10A TO ALCA-3 OPEN | | |
| LEAD ANALYST: K. SCHMI | ECKPEPER | SUBSYS LEAD: | K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) GSE 2) PRE-FLIGHT TEST II 3) APCA-6 4) FUSE, 10A TO ALCA 5) 6) 7) 8) | | | |
| 9) 05-6 | | | |
| | CRITICALI | TIES | |
| FLIGHT PHASE | HDW/FUNC | | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | | | , |
| REDUNDANCY SCREENS: | A [] B | [] c | [] |
| LOCATION: 56V76A13 PART NUMBER: ME451-00 | | | |
| CAUSES: CONTAMINATION | , VIBRATION, M | ECH SHOCK, THI | ERMAL STRESS |
| EFFECTS/RATIONALE: THIS ITEM IS USED DURI FLIGHT OPERATIONS. | ING GROUND C/O | ONLY AND HAS | NO EFFECT ON |

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 5657 ABORT: MDAC ID: ITEM: FUSE, 10A TO ALCA-1 FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) 2) PRE-FLIGHT TEST BUS #1 3) APCA-4 4) FUSE, 10A TO ALCA-1 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT 3/3 PRELAUNCH: 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134F7 PART NUMBER: ME451-0009-1005 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS ITEM IS USED DURING GROUND C/O ONLY AND HAS NO EFFECT ON FLIGHT OPERATIONS.

REFERENCES: 76AS22B

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5658 ITEM: FUSE, 3A TO GSE MONITOR FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLT TEST BUS #1 3) APCA-4 4) FUSE, 3A TO GSE MONITOR 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 54V76A134F9 PART NUMBER: ME451-0009-1003 CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS EFFECTS/RATIONALE: THIS CIRCUIT IS USED FOR GROUND C/O ONLY AND IS NOT POWERED DURING FLIGHT OPERATIONS.

REFERENCES: 76AS22B

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 5659 MDAC ID: HYBRID DRIVER TYPE I (INHIBIT BUS 1) ITEM: FAILURE MODE: FAILS ON SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) FLCA-3 HYBRID DRIVER TYPE I (INHIBIT BUS 1) 4) 5) 6) 7) 8) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: AOA: 3/3 3/3 ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFI.'G: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A18A.7 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O OILY.

REFERENCES: 76AT19F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5660 ITEM: HYBRID DRIVER TYPE I (INHIBIT BUS 1) FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 4) HYBRID DRIVER TYPE I (INHIBIT BUS 1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A18AR7 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT19F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 5661 ABORT: MDAC ID: HYBRID DRIVER TYPE I (INHIBIT BUS 2) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) 4) HYBRID DRIVER TYPE I (INHIBIT BUS 2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A[] B[] C[] 83V76A18AR6 LOCATION: PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE:

REFERENCES: 76AT21F

THIS ITEM IS USED FOR GROUND C/O ONLY.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 5662 3/3 ABORT: MDAC ID: HYBRID DRIVER TYPE I (INHIBIT BUS 2) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) FLCA-3 4) HYBRID DRIVER TYPE I (INHIBIT BUS 2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: AOA: ONORBIT: 3/3 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A18AR6 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY. REFERENCES: 76AT21F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5663 HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER PRE-FLIGHT TEST BUS #2 FLCA-3 3) HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A18AR8 PART NUMBER: MC477-0263-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT18F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5664 HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) FLCA-3 4) HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 TAL: 3/3 3/3 LIFTOFF: AOA: ONORBIT: 3/3 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [LOCATION: 83V76A18AR8 PART NUMBER: MC477-0263-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5665 ABORT: 3/3

ITEM: HYBRID DRIVER TYPE III (RESISTANCE TEST BUS)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) GSE POWER
- 2) PRE-FLIGHT TEST BUS #2
- 3) FLCA-2
- 4) HYBRID DRIVER TYPE III (RESISTANCE TEST BUS)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | _3/3 |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 82V76A17AR8
PART NUMBER: MC477-0263-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT11F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5666 HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #2 3) FLCA-2 4) HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: TAL: 3/3 AOA: ONORBIT: 3/3 3/3 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A17AR8 PART NUMBER: MC477-0263-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT11F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5667 HYBRID DRIVER TYPE I (INHIBIT BUS 1) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 1) PRE-FLIGHT TEST BUS #2 3) 4) HYBRID DRIVER TYPE I (INHIBIT BUS 1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT 3/3 PRELAUNCH: 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 3/3 ONORBIT: AOA: 3/3 ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: B [] C [] A []

LOCATION: 82V76A17AR7
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT12F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: ABORT: 3/3 MDAC ID: 5668 HYBRID DRIVER TYPE I (INHIBIT BUS 1) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #2 2) 4) HYBRID DRIVER TYPE I (INHIBIT BUS 1) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 PRELAUNCH: RTLS: 3/3 3/3 LIFTOFF: TAL: 3/3 3/3 ONORBIT: AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A17AR7 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT12F

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 5669 MDAC ID: HYBRID DRIVER TYPE I (INHIBIT BUS 2) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 1) PRE-FLIGHT TEST BUS #2 2) 3) HYBRID DRIVER TYPE I (INHIBIT BUS 2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 PRELAUNCH: 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 82V76A17AR6
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT14F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5670 ABORT: HYBRID DRIVER TYPE I (INHIBIT BUS 2) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER PRE-FLIGHT TEST BUS #2 2) 3) FLCA-2 4) HYBRID DRIVER TYPE I (INHIBIT BUS 2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 LIFTOFF: TAL: 3/3 AOA: 3/3 3/3 ONORBIT: 3/3 3/3 ATO: DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A17AR6 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5671 HYBRID DRIVER TYPE I (INHIBIT BUS 1) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #1 2) FLCA-1 3) HYBRID DRIVER TYPE I (INHIBIT BUS 1) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A16AR7 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT5F

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5672 HYBRID DRIVER TYPE I (INHIBIT BUS 1) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #1 3) FLCA-1 4) HYBRID DRIVER TYPE I (INHIBIT BUS 1) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A16AR7 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY. REFERENCES: 76AT5F

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5673 MDAC ID: HYBRID DRIVER TYPE I (INHIBIT BUS 2) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 1) PRE-FLIGHT TEST BUS #1 2) 3) HYBRID DRIVER TYPE I (INHIBIT BUS 2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A16AR6

LOCATION: 81V76A16AR6
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT7F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 5674 3/3 MDAC ID: ABORT: HYBRID DRIVER TYPE I (INHIBIT BUS 2) ITEM: FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: GSE POWER 1) PRE-FLIGHT TEST BUS #1 2) 3) FLCA-1 4) HYBRID DRIVER TYPE I (INHIBIT BUS 2) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE PRELAUNCH: 3/3 3/3 RTLS: LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A16AR6 PART NUMBER: MC477-0261-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

REFERENCES: 76AT7F

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5675 MDAC ID: HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER PRE-FLIGHT TEST BUS #1 2) 3) FLCA-1 HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A16AR8 PART NUMBER: MC477-0263-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS ITEM IS USED FOR GROUND C/O ONLY.

REFERENCES: 76AT4F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5676 ITEM: HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) FAILURE MODE: FAILS OFF LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) GSE POWER 2) PRE-FLIGHT TEST BUS #1 3) FLCA-1 4) HYBRID DRIVER TYPE III (RESISTANCE TEST BUS) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT 3/3 RTLS FLIGHT PHASE HDW/FUNC 3/3 PRELAUNCH: RTLS: TAL: 3/3 LIFTOFF: 3/3 AOA: ONORBIT: 3/3 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A16AR8 PART NUMBER: MC477-0263-0002 CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE EFFECTS/RATIONALE: THIS ITEM IS USED FOR GROUND C/O ONLY.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

3/1R FLIGHT: SUBSYSTEM: EPD&C 3/1R ABORT: MDAC ID: 5677

SWITCH, TOGGLE (CONTROL BUS PWR MN A) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS A
- 2) RIA1 PANEL
- SWITCH, TOGGLE (CONTROL BUS PWR MN A) 3)
- 4)
- 5)
- 6)
- 7) 8)
- 05-6 9)

CRITTCALITTES

| CNIIICADIII | | | |
|----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | • | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S1 PART NUMBER: ME452-0102-7102

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THE THREE MAIN DC BUSS SOURCES TO THE CONTROL BUSSES. LOSS OF ALL SOURCES MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AU24H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5678 ITEM: SWITCH, TOGGLE (CONTROL BUS PWR MN A) FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) RIAL PANEL 3) SWITCH, TOGGLE (CONTROL BUS PWR MN A) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC 3/3 RTLS: TAL: PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 3/3 AOA: 3/3 ONORBIT: ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1S1 PART NUMBER: ME452-0102-7102 CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU24H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/1R FLIGHT: SUBSYSTEM: EPD&C

3/1R ABORT: MDAC ID: 5679

SWITCH, TOGGLE (CONTROL BUS PWR MN B) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- 2) RIAI PANEL
- SWITCH, TOGGLE (CONTROL BUS PWR MN B) 3)

4)

5)

6)

7) 8)

9) 05-6

CRITTCALITIES

| 01/414011111111111111111111111111111111 | | |
|---|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | HDW/FUNC ABORT 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 32V73A1A1S2 PART NUMBER: ME452-0102-7102

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THE THREE MAIN DC BUSS SOURCES TO THE CONTROL BUSSES. LOSS OF ALL SOURCES MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AU17H

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: 3/3 MDAC ID: 5680 SWITCH, TOGGLE (CONTROL BUS PWR MN B) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) RIA1 PANEL 3) SWITCH, TOGGLE (CONTROL BUS PWR MN B) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 LIFTOFF: TAL: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 LOCATION: 32V73A1A1S2 PART NUMBER: ME452-0102-7102 CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU17H

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID: 5681

FLIGHT: ABORT:

3/1R 3/1R

SWITCH, TOGGLE (CONTROL BUS PWR MN C)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) RIAL PANEL
- SWITCH, TOGGLE (CONTROL BUS PWR MN C) 3)

4)

ITEM:

5)

6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: **32V73A1A1S3** PART NUMBER: ME452-0102-7102

CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THE THREE MAIN DC BUSS SOURCES TO THE CONTROL BUSSES. LOSS OF ALL SOURCES MAY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AU10H

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5682 SWITCH, TOGGLE (CONTROL BUS PWR MN C) ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) RIAL PANEL 3) SWITCH, TOGGLE (CONTROL BUS PWR MN C) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: PRELAUNCH: 3/3 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 32V73A1A1S3 PART NUMBER: ME452-0102-7102 CAUSES: PIECE PART STRUCTURAL FAILURE, VIBRATION, MECH SHOCK, CONTAMINATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT AS THIS IS NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU10H

1. 34 ft ft Alle Herrige (Herrige) (Herrige) 144.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5683 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO CONT BUSSES AB & CA RESET)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIA1 PANEL
- 4) RESISTOR, 1.2K 2W (TO CONT BUSSES AB & CA RESET)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| CITT T CULT T T T D | | | |
|---------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | - |
| | | | |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A1A1A1R1
PART NUMBER: RWR71S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF THIS ITEM WOULD RESULT IN LOSS OF REDUNDANT POWER TO TWO CONT BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AU24H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5684 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO CONT BUSSES AB & BC RESET)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAI PANEL
- 4) RESISTOR, 1.2K 2W (TO CONT BUSSES AB & BC RESET)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A1A1A2R1
PART NUMBER: RWR71S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF THIS ITEM WOULD RESULT IN LOSS OF REDUNDANT POWER TO TWO CONT BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AU17G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5685 ABORT: 3/1R

ITEM: RESISTOR, 1.2K 2W (TO CONT BUSSES CA & BC RESET)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RIAI PANEL
- 4) RESISTOR, 1.2K 2W (TO CONT BUSSES CA & BC RESET)

5) 6)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| 41/7 7 41177 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 | | |
|--|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| • | ATO: | 3/1R |
| • | | - |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | HDW/FUNC ABORT 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [2] B [F] C [P]

LOCATION: 32V73A1A1A2R2
PART NUMBER: RWR71S1211FR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

LOSS OF THIS ITEM WOULD RESULT IN LOSS OF REDUNDANT POWER TO TWO CONT BUSSES. LOSS OF ALL REDUNDANCY COULD CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO POWER CRITICAL LOADS.

REFERENCES: 76AU9G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5686 ABORT: 3/1R

ITEM: FUSE, 5A TO FLCA-1 (CONT BUS PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) FUSE, 5A TO FLCA-1 (CONT BUS PWR)
- 5) 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 81V76A22F27
PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE OF THREE POWER SOURCES TO SIX CONTROL BUSSES. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AU23G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5687 ABORT: 3/1R

ITEM: RPC, 5A TO CONT BUS CA1 & AB1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) RPC, 5A TO CONT BUS CA1 & AB1
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| CUTITO | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 81V76A22RPC1
PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AU23D

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 MDAC ID: 5688 ABORT: RPC, 5A TO CONT BUS CAL & ABL ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) FPCA-1 4) RPC, 5A TO CONT BUS CAL & ABL 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: FLIGHT PHASE HDW/FUNC 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A22RPC1 PART NUMBER: MC450-0017-2050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS

REFERENCES: 76AU23D

IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5689 ABORT: 3/1R

ITEM: RPC, 5A TO CONT BUS CA2 & AB2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) RPC, 5A TO CONT BUS CA2 & AB2
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 81V76A22RPC2 PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 ABORT: MDAC ID: 5690 ITEM: RPC, 5A TO CONT BUS CA2 & AB2 FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) FPCA-1
4) RPC, 5A TO CONT BUS CA2 & AB2 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC
3/3 RTLS: 3/3
3/3 TAL: 3/3
3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: 3/3 DEORBIT: ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A22RPC2 PART NUMBER: MC450-0017-2050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5691 ABORT: 3/1R

ITEM: RPC, 5A TO CONT BUS CA3 & AB3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) RPC, 5A TO CONT BUS CA3 & AB3
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| 41/2 2 4 41:52 4 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | | | |
|--|--------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | - |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 81V76A22RPC3
PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 3/3 MDAC ID: 5692 RPC, 5A TO CONT BUS CA3 & AB3 ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A 2) MAIN DC DIST ASSY #1 3) FPCA-1 4) RPC, 5A TO CONT BUS CA3 & AB3 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT 3/3 RTLS: FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A22RPC3 PART NUMBER: MC450-0017-2050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT: MDAC ID: 5693

DIODE, ISOLATION 12A (TO CONT BUS AB1) ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS A 1)
- MAIN DC DIST ASSY #1 2)
- 3)
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB1)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | · |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22CR1 PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5694 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB1)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB1)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | | · |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 81V76A22CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES.

THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5695 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA1)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA1)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 81V76A22CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5696 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA1)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5697 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB2)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| 41/2 * ± 41:41 = 1 = 1 | | | |
|------------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22CR3
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5698 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB2)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB2)

5) 6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 81V76A22CR3
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5699

ABORT:

3/1R

DIODE, ISOLATION 12A (TO CONT BUS CA2)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- MAIN DC DIST ASSY #1
- 3) FPCA-1
- DIODE, ISOLATION 12A (TO CONT BUS CA2) 4)
- 5) 6)
- 7)
- 8)
- 05-6 9)

CRITICALITIES

| 4./2.2.4 | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 81V76A22CR4

PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5700 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA2)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5701 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB3)
- 5)
- 6) 7)
- 7) 8)
- 9) 05-6

CRITICALITIES

| CVIIICUDIIID | | |
|--------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | HDW/FUNC ABORT 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22CR5
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5702 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB3)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB3)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 81V76A22CR5
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5703 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA3)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA3)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| CVIIICULIA | | |
|------------|---|--|
| HDW/FUNC | ABORT | HDW/FUNC |
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | · | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | HDW/FUNC ABORT 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 81V76A22CR6
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5704 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) FPCA-1
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA3)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A22CR6
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5705 RESISTOR, 2.2K 1/2W (TO MDM OF1) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB1 & CA1 2) FPCA-1 RESISTOR, 2.2K 1/2W (TO MDM OF1) 3) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH:

3/3 3/3 TAL: LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3

LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A22A1R1 PART NUMBER: RLR20C222GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5706 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|--|---|
| ITEM: RESISTOR, 2.2K 1/2W FAILURE MODE: FAILS OPEN | V (TO MDM OF1) |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) CONT BUS AB2 & CA2 2) FPCA-1 3) RESISTOR, 2.2K 1/2W (TO MDM CA) 4) 5) 6) 7) 8) | OF1) |
| 9) 05-6 | |
| CRITICA | LITTES |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | |
| REDUNDANCY SCREENS: A [] | B[] C[] 1 |
| LOCATION: 81V76A22A1R2 PART NUMBER: RLR20C222GR | |
| CAUSES: CONTAMINATION, THERMAL ST | RESS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THE MONITORING OF THIS FUNCTION IS OPERATION AND ALTERNATE MONITORS A | |
| REFERENCES: 76AU20D | |

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5707 RESISTOR, 2.2K 1/2W (TO MDM OF1) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB3 & CA3 2) FPCA-1 RESISTOR, 2.2K 1/2W (TO MDM OF1) 3) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A22A1R3
PART NUMBER: RLR20C222GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5708 ABORT: ITEM: RESISTOR, 1.8K 1/4W (TO SIG COND OF1) FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB1 & CA1 2) FPCA-1 RESISTOR, 1.8K 1/4W (TO SIG COND OF1) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: B[] C[] A [] LOCATION: 81V76A22A1R35 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5709 RESISTOR, 1.8K 1/4W (TO DC RETURN) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB1 & CA1 2) FPCA-1 RESISTOR, 1.8K 1/4W (TO DC RETURN) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 3/3 3/3 ATO: DEORBIT:

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A22A1R36
PART NUMBER: RLR07C182GR

LANDING/SAFING: 3/3

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 MDAC ID: 5710 ABORT: RESISTOR, 1.8K 1/4W (TO SIG COND OF1) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB2 & CA2 2) FPCA-1 3) RESISTOR, 1.8K 1/4W (TO SIG COND OF1) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 LIFTOFF: TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] 81V76A22A1R37 LOCATION: PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5711 MDAC ID: RESISTOR, 1.8K 1/4W (TO DC RETURN) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB2 & CA2 FPCA-1 2) RESISTOR, 1.8K 1/4W (TO DC RETURN) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT

3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A22A1R38
PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

| DATE: 3/11/87 H SUBSYSTEM: EPD&C MDAC ID: 5712 | IGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|--|
| ITEM: RESISTOR, 1.8K 1/4W (TO FAILURE MODE: FAILS OPEN | O SIG COND OF1) |
| LEAD ANALYST: K. SCHMECKPEPER ST | UBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) CONT BUS AB3 & CA3 2) FPCA-1 3) RESISTOR, 1.8K 1/4W (TO SIG COND 4) 5) 6) 7) 8) | OF1) |
| 9) 05-6 | |
| CRITICALIT | TES |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | |
| REDUNDANCY SCREENS: A [] B | [] c [] |
| LOCATION: 81V76A22A1R39 PART NUMBER: RLR07C182GR | |
| CAUSES: CONTAMINATION, THERMAL STRESS | S, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCT: FLIGHT/VEHICLE OPERATION. | ION THAT IS NOT CRITICAL TO |
| REFERENCES: 76AU18D | |

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5713 RESISTOR, 1.8K 1/4W (TO DC RETURN) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB3 & CA3 2) FPCA-1 RESISTOR, 1.8K 1/4W (TO DC RETURN) 4) 5) 6) 7) 8) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 81V76A22A1R40 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO

REFERENCES: 76AU18D

FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 5714 3/3 MDAC ID: ABORT:

ITEM: HYBRID DRIVER TYPE I (CONT BUS CAL & ABI)

FAILURE MODE: FAILS ON

SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS A
- MAIN DC DIST ASSY #1
- RIAL PANEL
- FLCA-1 4)
- 5) HYBRID DRIVER TYPE I (CONT BUS CA1 & AB1)

6) 7)

8)

05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | • |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A16AR1

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU24F

DATE: 3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: MDAC ID: 5715 ABORT:

LIGHT: 3/1R BORT: 3/1R

ITEM:

HYBRID DRIVER TYPE I (CONT BUS CA1 & AB1)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAI PANEL
- 4) FLCA-1
- 5) HYBRID DRIVER TYPE I (CONT BUS CA1 & AB1)
- 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| | V+1.2 + 2 V-1 | | |
|-----------------|---------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |
| | • | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A16AR1
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU24F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 3/3 MDAC ID: 5716 ABORT: HYBRID DRIVER TYPE I (CONT BUS CA2 & AB2) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS A MAIN DC DIST ASSY #1 3) RIAI PANEL 4) FLCA-1 5) HYBRID DRIVER TYPE I (CONT BUS CA2 & AB2) 6) 7) 8) 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-------------------|---|
| 3/3 | RTLS: | 3/3 |
| 3/3 | TAL: | 3/3 |
| 3/3 | AOA: | 3/3 |
| 3/3 | ATO: | 3/3 |
| 3/3 | | Ť |
| | 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A16AR2 PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU21F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5717 ABORT: 3/1R

ITEM: HYBRID DRIVER TYPE I (CONT BUS CA2 & AB2)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAI PANEL
- 4) FLCA-1
- 5) HYBRID DRIVER TYPE I (CONT BUS CA2 & AB2)
- 6) 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE H | IDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [11] B [F] C [P]

LOCATION: 81

81V76A16AR2

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU21F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5718 ABORT: 3/3

ITEM: HYBRID DRIVER TYPE I (CONT BUS CA3 & AB3)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAI PANEL
- 4) FLCA-1
- 5) HYBRID DRIVER TYPE I (CONT BUS CA3 & AB3)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 81V76A16AR3

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU19F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5719 ABORT: 3/1R

ITEM: HYBRID DRIVER TYPE I (CONT BUS CA3 & AB3)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DC DIST ASSY #1
- 3) RIAL PANEL
- 4) FLCA-1
- 5) HYBRID DRIVER TYPE I (CONT BUS CA3 & AB3)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| 41/7 7 7 41:77 7 7 7 7 | | | |
|------------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | -3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 81V76A16AR3
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU19F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5720 ABORT: 3/3 ITEM: HYBRID DRIVER TYPE I (CONT BUS BC1 & AB1)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAL PANEL
- 4) FLCA-2
- 5) HYBRID DRIVER TYPE I (CONT BUS BC1 & AB1)
- 6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 82V76A17AR1

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU17F

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

5721

FLIGHT: ABORT:

3/1R 3/1R

ITEM:

HYBRID DRIVER TYPE I (CONT BUS BC1 & AB1)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- MAIN DC DIST ASSY #2
- 3) RIA1 PANEL
- 4) FLCA-2
- HYBRID DRIVER TYPE I (CONT BUS BC1 & AB1) 5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A17AR1

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU17F

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C

MDAC ID: 5722 ABORT: 3/3

ITEM: HYBRID DRIVER TYPE I (CONT BUS BC2 & AB2)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAL PANEL
- 4) FLCA-2
- 5) HYBRID DRIVER TYPE I (CONT BUS BC2 & AB2)

7)

8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|--------------------------|---|--|
| 3/3 | RTLS: | 3/3 | |
| 3/3 | TAL: | 3/3 | |
| 3/3 | AOA: | 3/3 | |
| 3/3 | ATO: | 3/3 | |
| 3/3 | | • | |
| | 3/3 3/3 3/3 3/3 | 3/3 RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 82V76A17AR2

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU14F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5723 ABORT: 3/1R

ITEM: HYBRID DRIVER TYPE I (CONT BUS BC2 & AB2)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) R1A1 PANEL
- 4) FLCA-2
- 5) HYBRID DRIVER TYPE I (CONT BUS BC2 & AB2)

6) 7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | · . | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A17AR2

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU14F

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5724 ITEM: HYBRID DRIVER TYPE I (CONT BUS BC3 & AB3) FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) RIAL PANEL 4) FLCA-2 5) HYBRID DRIVER TYPE I (CONT BUS BC3 & AB3) 7) 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 82V76A17AR3

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU12F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5725 ABORT: 3/1R

ITEM: HYBRID DRIVER TYPE I (CONT BUS BC3 & AB3)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) RIAI PANEL
- 4) FLCA-2
- 5) HYBRID DRIVER TYPE I (CONT BUS BC3 & AB3)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A17AR3

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU12F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5726 HYBRID DRIVER TYPE I (CONT BUS BC1 & CA1) ITEM: FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 RIA1 PANEL FLCA-3 5) HYBRID DRIVER TYPE I (CONT BUS BC1 & CA1) 7) 8) 9) 05 - 6CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 83V76A18AR1

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU9F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5727 ABORT: 3/1R

ITEM: HYBRID DRIVER TYPE I (CONT BUS BC1 & CA1)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RIAI PANEL
- 4) FLCA-3
- 5) HYBRID DRIVER TYPE I (CONT BUS BC1 & CA1)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | | |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A18AR1
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU9F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5728 ABORT: 3/3

ITEM: HYBRID DRIVER TYPE I (CONT BUS BC2 & CA2)

FAILURE MODE: FAILS ON

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RIAI PANEL
- 4) FLCA-3
- 5) HYBRID DRIVER TYPE I (CONT BUS BC2 & CA2)
- 6) 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING | : 3/3 | | · | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 83V76A18AR2
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION, PIECE PART STRUCTURAL FAILURE

PIECE PARI SIRUCIURAL FAILU

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU7F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5729 ABORT: 3/1R

ITEM: HYBRID DRIVER TYPE I (CONT BUS BC2 & CA2)

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) RIAI PANEL
- 4) FLCA-3
- 5) HYBRID DRIVER TYPE I (CONT BUS BC2 & CA2)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | : 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A18AR2

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU7F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 MDAC ID: 5730 ABORT: ITEM: HYBRID DRIVER TYPE I (CONT BUS BC3 & CA3) FAILURE MODE: FAILS ON LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) RIAI PANEL 4) FLCA-3 5) HYBRID DRIVER TYPE I (CONT BUS BC3 & CA3) 6) 7) 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | • • • | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 83V76A18AR3
PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE INABILITY TO REMOVE POWER FROM TWO CONTROL BUSSES. NO EFFECT ON CREW/MISSION/VEHICLE SINCE THIS IS THE NORMAL FLIGHT CONFIGURATION.

REFERENCES: 76AU5F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT: MDAC ID: 5731

HYBRID DRIVER TYPE I (CONT BUS BC3 & CA3) ITEM:

FAILURE MODE: FAILS OFF

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS C
- MAIN DC DIST ASSY #3 2)
- RIA1 PANEL 3)
- 4) FLCA-3
- HYBRID DRIVER TYPE I (CONT BUS BC3 & CA3) 5)

6) 7)

8) 05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A18AR3

PART NUMBER: MC477-0261-0002

CAUSES: VIBRATION, MECH SHOCK, THERMAL STRESS, CONTAMINATION,

PIECE PART STRUCTURAL FAILURE

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL REDUNDANCY COULD LEAD TO LOSS OF CREW/VEHICLE.

REFERENCES: 76AU5F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5732 ABORT: 3/1R

ITEM: FUSE, 5A TO FLCA-2 (CONT BUS PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) FUSE, 5A TO FLCA-2 (CONT BUS PWR)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|--------------|-----------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | | • |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 82V76A23F32

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE OF THREE POWER SOURCES TO SIX CONTROL BUSSES. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

3/1R FLIGHT: SUBSYSTEM: EPD&C 3/1R ABORT: 5733 MDAC ID:

RPC, 5A TO CONT BUS BC1 & AB1 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- RPC, 5A TO CONT BUS BC1 & AB1 4)

5)

6) 7)

8)

05-6 9)

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 82V76A23RPC1 PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5734 ABORT: 3/3 ITEM: RPC, 5A TO CONT BUS BC1 & AB1 FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) FPCA-2 4) RPC, 5A TO CONT BUS BC1 & AB1 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23RPC1 PART NUMBER: MC450-0017-2050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5735 ABORT: 3/1R

ITEM: RPC, 5A TO CONT BUS BC2 & AB2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) RPC, 5A TO CONT BUS BC2 & AB2
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | • | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 82V76A23RPC2
PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

3/11/87 HIGHEST CRITICALITY HDW/FUNC DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 MDAC ID: ABORT: 5736 RPC, 5A TO CONT BUS BC2 & AB2 ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) FPCA-2 4) RPC, 5A TO CONT BUS BC2 & AB2 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3

ATO:

3/3

REDUNDANCY SCREENS: A [] B [] C []

3/3

LOCATION: 82V76A23RPC2 PART NUMBER: MC450-0017-2050

DEORBIT:

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

LANDING/SAFING: 3/3

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID:

5737

ABORT:

3/1R

ITEM:

RPC, 5A TO CONT BUS BC3 & AB3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- MAIN DC DIST ASSY #2 2)
- FPCA-2 3)
- RPC, 5A TO CONT BUS BC3 & AB3 4)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

82V76A23RPC3

PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5738 ITEM: RPC, 5A TO CONT BUS BC3 & AB3 FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS B 2) MAIN DC DIST ASSY #2 3) FPCA-2 RPC, 5A TO CONT BUS BC3 & AB3 5) 6) 7) 8) 05-6 9) CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: TAL: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23RPC3 PART NUMBER: MC450-0017-2050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5739 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB1)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5740 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB1)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB1)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 82V76A23CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5741 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC1)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC1)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | | | · | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 82V76A23CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5742 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC1)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5743 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC2)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82

82V76A23CR3

PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5744 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC2)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2

4) DIODE, ISOLATION 12A (TO CONT BUS BC2)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 82V76A23CR3
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5745 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB2)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB2)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | . = |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 82V76A23CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5746 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS AB2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB2)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| : 3/3 | | • |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/1R FLIGHT: SUBSYSTEM: EPD&C 3/1R ABORT:

MDAC ID: 5747

DIODE, ISOLATION 12A (TO CONT BUS BC3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- MAIN DC DIST ASSY #2 2)
- 3) FPCA-2
- DIODE, ISOLATION 12A (TO CONT BUS BC3) 4)
- 5) 6)

ITEM:

- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING | : 3/3 | | · | |
| | | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23CR5 PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R
MDAC ID: 5748 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC3)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC3)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| | ~ | | | |
|-----------------|----------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 82V76A23CR5
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/1R FLIGHT: SUBSYSTEM: EPD&C

3/1R ABORT: MDAC ID: 5749

DIODE, ISOLATION 12A (TO CONT BUS AB3) ITEM:

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS B
- MAIN DC DIST ASSY #2 2)
- 3)
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB3)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| | CHITICALLIA | | | |
|-----------------|-------------|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 2/3 | | | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 82V76A23CR6 PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

3/11/87 DATE:

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 3/1R

MDAC ID:

5750

ABORT:

3/1R

ITEM:

DIODE, ISOLATION 12A (TO CONT BUS AB3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DC DIST ASSY #2
- 3) FPCA-2
- 4) DIODE, ISOLATION 12A (TO CONT BUS AB3)

5)

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| | • | | 3/1R |
| LIFTOFF: | 3/1R | TAL: | • |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 82V76A23CR6

PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: EPD&C SUBSYSTEM: 3/3 ABORT: 5751 MDAC ID: RESISTOR, 2.2K 1/2W (TO MDM OF2) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: CONT BUS AB1 & BC1 FPCA-2 2) RESISTOR, 2.2K 1/2W (TO MDM OF2) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23A1R19 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE

REFERENCES: 76AU16D

OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5752 RESISTOR, 2.2K 1/2W (TO MDM OF2) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB2 & BC2 2) FPCA-2 3) RESISTOR, 2.2K 1/2W (TO MDM OF2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: TAL: AOA: PRELAUNCH: 3/3 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23A1R20 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: 5753 MDAC ID: RESISTOR, 2.2K 1/2W (TO MDM OF2) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB3 & BC3 FPCA-2 2) RESISTOR, 2.2K 1/2W (TO MDM OF2) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES ABORT HDW/FUNC HDW/FUNC FLIGHT PHASE 3/3 RTLS: PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 AOA: 3/3 ONORBIT: 3/3 3/3 DEORBIT: 3/3 ATO: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23A1R21 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5754 ABORT: ITEM: RESISTOR, 1.8K 1/4W (TO SIG COND OF2) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB1 & BC1 2) FPCA-2 RESISTOR, 1.8K 1/4W (TO SIG COND OF2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: 3/3 ONORBIT: 3/3 AOA: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23A1R51 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION. REFERENCES: 76AU15D

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: EPD&C SUBSYSTEM: 3/3 ABORT: MDAC ID: 5755 RESISTOR, 1.8K 1/4W (TO DC RETURN) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS ABL & BCL 2) FPCA-2 RESISTOR, 1.8K 1/4W (TO DC RETURN) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT 3/3 RTLS: 3/3 PRELAUNCH: 3/3 3/3 TAL: LIFTOFF: 3/3 3/3 AOA: ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3] B[] C [] REDUNDANCY SCREENS: A [82V76A23A1R52 LOCATION: PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5756 ABORT: 3/3 ITEM: RESISTOR, 1.8K 1/4W (TO SIG COND OF2) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB2 & BC2 2) FPCA-2 3) RESISTOR, 1.8K 1/4W (TO SIG COND OF2) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT
3/3 RTLS:
3/3 TAL: FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 82V76A23A1R53 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION. REFERENCES: 76AU13D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 EPD&C SUBSYSTEM: 3/3 ABORT: MDAC ID: 5757 RESISTOR, 1.8K 1/4W (TO DC RETURN) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: CONT BUS AB2 & BC2 1) 2) FPCA-2 RESISTOR, 1.8K 1/4W (TO DC RETURN) 3) 4) 5) 6) 7) 8) 05-6 CRITICALITIES

| | 01/2 1 T CULT 1 T T T T | | |
|-----------------|-------------------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 3/3 | AOA: | - 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | : 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 82V76A23A1R54
PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

| DATE: 3/11/87 SUBSYSTEM: EPD&C MDAC ID: 5758 | HIGHEST CRITICALITY HDW/FUNC FLIGHT: 3/3 ABORT: 3/3 |
|---|---|
| ITEM: RESISTOR, 1.8K 1/4W FAILURE MODE: FAILS OPEN | (TO SIG COND OF2) |
| LEAD ANALYST: K. SCHMECKPEPER | SUBSYS LEAD: K. SCHMECKPEPER |
| BREAKDOWN HIERARCHY: 1) CONT BUS AB3 & BC3 2) FPCA-2 3) RESISTOR, 1.8K 1/4W (TO SIG CO 4) 5) 6) 7) 8) | ND OF2) |
| 9) 05-6 | |
| CRITICAL | LITIES |
| FLIGHT PHASE HDW/FUNC PRELAUNCH: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 | ABORT HDW/FUNC RTLS: 3/3 TAL: 3/3 AOA: 3/3 ATO: 3/3 |
| REDUNDANCY SCREENS: A [] | B[] C[] |
| LOCATION: 82V76A23A1R55 PART NUMBER: RLR07C182GR | |
| CAUSES: CONTAMINATION, THERMAL STR | ESS, VIBRATION, MECH SHOCK |
| EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUN FLIGHT/VEHICLE OPERATION. | ICTION THAT IS NOT CRITICAL TO |
| REFERENCES: 76AU11D | |

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 5759 MDAC ID: RESISTOR, 1.8K 1/4W (TO DC RETURN) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS AB3 & BC3 2) FPCA-2 3) RESISTOR, 1.8K 1/4W (TO DC RETURN) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC HDW/FUNC ABORT FLIGHT PHASE 3/3 RTLS: 3/3 PRELAUNCH: 3/3 TAL: 3/3 LIFTOFF: 3/3 AOA: 3/3 ONORBIT: ATO: 3/3 DEORBIT: 3/3 LANDING/SAFING: 3/3 C [] REDUNDANCY SCREENS: A [] B [] LOCATION: 82V76A23A1R56 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5760 RESISTOR, 1.8K 1/4W (TO DC RETURN) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA3 & BC3 2) FPCA-3 3) RESISTOR, 1.8K 1/4W (TO DC RETURN) 4) 5) 6) 7) 8) 05-6 9) CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] CII LOCATION: 83V76A24A1R48 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION. REFERENCES: 76AU4D

HDW/FUNC HIGHEST CRITICALITY 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5761 RESISTOR, 1.8K 1/4W (TO SIG COND OF3) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA3 & BC3 2) FPCA-3 RESISTOR, 1.8K 1/4W (TO SIG COND OF3) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: 3/3 3/3 AOA: ONORBIT: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 C [] B [] REDUNDANCY SCREENS: A [] LOCATION: 83V76A24A1R47 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO

REFERENCES: 76AU4D

FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5762 ITEM: RESISTOR, 1.8K 1/4W (TO DC RETURN) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA2 & BC2 2) FPCA-3 RESISTOR, 1.8K 1/4W (TO DC RETURN) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: AOA: 3/3 3/3 ATO: DEORBIT: 3/3 3/3 LANDING/SAFING: 3/3 B[] C[] REDUNDANCY SCREENS: A [] LOCATION: 83V76A24A1R46 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

REFERENCES:

76AU6D

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 ABORT: MDAC ID: 5763 RESISTOR, 1.8K 1/4W (TO SIG COND OF3) ITEM: FAILURE MODE: FAILS OPEN SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA2 & BC2 2) FPCA-3 RESISTOR, 1.8K 1/4W (TO SIG COND OF3) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT 3/3 RTLS: PRELAUNCH: 3/3 TAL: 3/3 3/3 LIFTOFF: AOA: 3/3 ONORBIT: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 B [] C [] REDUNDANCY SCREENS: A [] LOCATION: 83V76A24A1R45 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5764 ABORT: ITEM: RESISTOR, 1.8K 1/4W (TO DC RETURN) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CAL & BCL 2) FPCA-3 RESISTOR, 1.8K 1/4W (TO DC RETURN) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC RTLS: 3/3 PRELAUNCH: 3/3 LIFTOFF: 3/3 TAL: 3/3 ONORBIT: 3/3 AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A24A1R44 PART NUMBER: RLR07C182GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: 5765 MDAC ID: RESISTOR, 1.8K 1/4W (TO SIG COND OF3) ITEM: FAILS OPEN FAILURE MODE: SUBSYS LEAD: K. SCHMECKPEPER LEAD ANALYST: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA1 & BC1 2) FPCA-3 RESISTOR, 1.8K 1/4W (TO SIG COND OF3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC FLIGHT PHASE HDW/FUNC ABORT PRELAUNCH: RTLS: 3/3 3/3 TAL: 3/3 LIFTOFF: 3/3 3/3 ONORBIT: 3/3 AOA: 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 C [REDUNDANCY SCREENS: B [] A []

LOCATION: 83V76A24A1R43
PART NUMBER: RLR07C182GR

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THIS ITEM SUPPORTS A MONITORING FUNCTION THAT IS NOT CRITICAL TO FLIGHT/VEHICLE OPERATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 3/3 MDAC ID: 5766 ABORT: 3/3 RESISTOR, 2.2K 1/2W (TO MDM OF3) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA3 & BC3 2) FPCA-3 3) RESISTOR, 2.2K 1/2W (TO MDM OF3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC 3/3 RTLS: 3/3 3/3 TAL: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: 3/3 ONORBIT: AOA: 3/3 DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A24A1R17 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5767 RESISTOR, 2.2K 1/2W (TO MDM OF3) FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA2 & BC2 2) FPCA-3 RESISTOR, 2.2K 1/2W (TO MDM OF3) 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC FLIGHT PHASE RTLS: 3/3 3/3 PRELAUNCH: TAL: 3/3 LIFTOFF: 3/3 ONORBIT: 3/3 AOA: 3/3 3/3 ATO: 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A24A1R16 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE

REFERENCES: 76AU6D

OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: 3/3 FLIGHT: SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5768 RESISTOR, 2.2K 1/2W (TO MDM OF3) ITEM: FAILURE MODE: FAILS OPEN LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) CONT BUS CA1 & BC1 2) FPCA-3 RESISTOR, 2.2K 1/2W (TO MDM OF3) 3) 4) 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC PRELAUNCH: 3/3 RTLS: 3/3 3/3 3/3 LIFTOFF: TAL: AOA: 3/3 ONORBIT: 3/3 DEORBIT: ATO: 3/3 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B[] C[] LOCATION: 83V76A24A1R15 PART NUMBER: RLR20C222GR CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK EFFECTS/RATIONALE: THE MONITORING OF THIS FUNCTION IS NOT CRITICAL TO VEHICLE OPERATION AND ALTERNATE MONITORS ARE AVAILABLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5769

ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA1)
- 5) 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | | | |
|----------------|--|-------|----------|--|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING | : 3/3 | | · | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5770 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA1)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA1)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 83V76A24CR1
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5771 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC1)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC1)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|----------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | · |
| | 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 83V76A24CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5772 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC1)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC1)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24CR2
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5773 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA2)
- 5)
- 6)
- 7)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24CR3
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

SUBSYSTEM: EPD&C FLIGHT: 3/1R ABORT: 3/1R MDAC ID: 5774

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA2)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- MAIN DC DIST ASSY #3
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA2)

6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 83V76A24CR3 PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5775 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC2)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC2)

5)

6) 7)

7) 8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|----------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | • |
| | 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 83V76A24CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5776 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC2)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K, SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC2)

5) 6)

7)

8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24CR4
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5777 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA3)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24CR5
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5778 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS CA3)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS CA3)

5) 6)

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 83V76A24CR5
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5779 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC3)

FAILURE MODE: SHORTS

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC3)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [3] B [F] C [P]

LOCATION: 83V76A24CR6
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD TIE TWO MAIN DC BUSSES TOGETHER, WHICH MIGHT CAUSE AN RPC FAILURE DEPENDING ON CONTROL BUS LOADING. IF THE RPC OPENS, THIS WOULD REMOVE ONE SOURCE FROM TWO CONTROL BUSSES. IF ALL REDUNDANT SOURCES TO THE CONTROL BUS ARE LOST, THERE IS A POSSIBLE LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO POWER CRITICAL LOADS.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5780 ABORT: 3/1R

ITEM: DIODE, ISOLATION 12A (TO CONT BUS BC3)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) DIODE, ISOLATION 12A (TO CONT BUS BC3)

5) 6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 83V76A24CR6
PART NUMBER: JANTX1N1204RA

CAUSES: CONTAMINATION, THERMAL STRESS, VIBRATION, MECH SHOCK

EFFECTS/RATIONALE:

THE FIRST FAILURE WOULD CAUSE LOSS OF ONE REDUNDANT SOURCE TO A CONTROL BUS. AFTER THREE FAILURES THE CONTROL BUS WOULD BE LOST AND SOME CRITICAL LOADS WOULD BE AFFECTED. THIS COULD CAUSE LOSS OF CREW/VEHICLE.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5781 ABORT: 3/1R

ITEM: RPC, 5A TO CONT BUS CAL & BCL

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) RPC, 5A TO CONT BUS CA1 & BC1
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| V-1 | | | |
|-----------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 83V76A24RPC1
PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 3/3 ABORT: 3/3 SUBSYSTEM: EPD&C MDAC ID: 5782 ITEM: RPC, 5A TO CONT BUS CAL & BC1 FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) FPCA-3
4) RPC, 5A TO CONT BUS CAL & BCL 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT HDW/FUNC

3/3 RTLS: 3/3

3/3 TAL: 3/3

3/3 AOA: 3/3 FLIGHT PHASE PRELAUNCH: LIFTOFF: ONORBIT: DEORBIT: 3/3 ATO: 3/3 LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A24RPC1 PART NUMBER: MC450-0017-2050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5783 ABORT: 3/1R

ITEM: RPC, 5A TO CONT BUS CA2 & BC2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) RPC, 5A TO CONT BUS CA2 & BC2
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITICALITIES

| A1/T + T A1:40 + T TA | | | |
|-----------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFIN | īG: 3/3 | | |
| | | | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 83V76A24RPC2 PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 FLIGHT: 3/3 SUBSYSTEM: EPD&C ABORT: 3/3 MDAC ID: 5784 RPC, 5A TO CONT BUS CA2 & BC2 ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 3) FPCA-3 4) RPC, 5A TO CONT BUS CA2 & BC2 5) 6) 7) 8) 9) 05-6 CRITICALITIES FLIGHT PHASE HDW/FUNC ABORT HDW/FUNC

| PRELAUNCH: | 3/3 | RTLS: | 3/3 | |
|-----------------|-----|-------|-----|--|
| LIFTOFF: | 3/3 | TAL: | 3/3 | |
| ONORBIT: | 3/3 | AOA: | 3/3 | |
| DEORBIT: | 3/3 | ATO: | 3/3 | |
| LANDING/SAFING: | 3/3 | | · | |

REDUNDANCY SCREENS: A [] B [] C []

LOCATION: 83V76A24RPC2 PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH

SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT:

MDAC ID: 5785

RPC, 5A TO CONT BUS CA3 & BC3 ITEM: FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- FPCA-3 3)
- RPC, 5A TO CONT BUS CA3 & BC3 4)
- 5) 6)
- 7)
- 8)
- 05-6 9)

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC | |
|----------|---|--|--|
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 3/1R | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| : 3/3 | | · | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 83V76A24RPC3 PART NUMBER: MC450-0017-2050

CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION

EFFECTS/RATIONALE:

LOSS OF THIS RPC WOULD CAUSE THE LOSS OF ONE OF THREE REDUNDANT SOURCES TO TWO CONTROL BUSSES. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY RESULT IN LOSS OF CREW/VEHICLE DUE TO THE INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/3 SUBSYSTEM: EPD&C 3/3 ABORT: MDAC ID: 5786 RPC, 5A TO CONT BUS CA3 & BC3 ITEM: FAILURE MODE: FAILS CLOSED LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER BREAKDOWN HIERARCHY: 1) MAIN DC BUS C 2) MAIN DC DIST ASSY #3 FPCA-3 3) 4) RPC, 5A TO CONT BUS CA3 & BC3 5) 6) 7) 8) 9) 05-6 CRITICALITIES HDW/FUNC ABORT FLIGHT PHASE HDW/FUNC RTLS: TAL: 3/3 PRELAUNCH: 3/3 3/3 3/3 LIFTOFF: AOA: ONORBIT: 3/3 3/3 3/3 DEORBIT: LANDING/SAFING: 3/3 REDUNDANCY SCREENS: A [] B [] C [] LOCATION: 83V76A24RPC3 PART NUMBER: MC450-0017-2050 CAUSES: PIECE PART STRUCTURAL FAILURE, CONTAMINATION, MECH SHOCK, THERMAL STRESS, VIBRATION EFFECTS/RATIONALE: THIS FAILURE WOULD HAVE NO EFFECT ON CREW/VEHICLE/MISSION AS THIS IS THE NORMAL FLIGHT CONFIGURATION.

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 3/1R

MDAC ID: 5787 ABORT: 3/1R

ITEM: FUSE, 5A TO FLCA-3 (CONT BUS PWR)

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DC DIST ASSY #3
- 3) FPCA-3
- 4) FUSE, 5A TO FLCA-3 (CONT BUS PWR)
- 5) 6)
- 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC | |
|-----------------|----------|-------|----------|--|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R | |
| LIFTOFF: | 3/1R | TAL: | 3/1R | |
| ONORBIT: | 3/1R | AOA: | 3/1R | |
| DEORBIT: | 3/1R | ATO: | 3/1R | |
| LANDING/SAFING: | 3/3 | | • | |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION: 83V76A24F12
PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE LOSS OF ONE OF THREE POWER SOURCES TO SIX CONTROL BUSSES. LOSS OF ALL REDUNDANCY WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AU9G

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5788 ABORT: 3/3

ITEM: FUSE, 1A TO P/L RETENTION LATCHES SYS 1

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS AB1
- 2) A6A1 PANEL
- 3) FUSE, 1A TO P/L RETENTION LATCHES SYS 1
- 4) 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

36V73A6A1F1

PART NUMBER:

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDENT POWER TO P/L RETENTION LATCHES. SECOND FAILURE COULD CAUSE LOSS OF CREW/VEHICLE IF THE PAYLOAD HAD TO BE RELEASED PRIOR TO DEORBIT.

REFERENCES: 76AV13H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5789 ABORT: 3/3

ITEM: FUSE, 1A TO P/L RETENTION LATCHES SYS 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC1
- 2) A6Al PANEL
- 3) FUSE, 1A TO P/L RETENTION LATCHES SYS 2

4)

5)

6)

7)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 3/3 |
| DEORBIT: | 3/3 | ATO: | 3/3 |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [P] C [P]

LOCATION:

36V73A6A1F2

PART NUMBER:

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE LOSS OF REDUNDENT POWER TO P/L RETENTION LATCHES. SECOND FAILURE COULD CAUSE LOSS OF CREW/VEHICLE IF THE PAYLOAD HAD TO BE RELEASED PRIOR TO DEORBIT.

REFERENCES: 76AV15F

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT:

3/1R

MDAC ID: 5790

ABORT:

3/1R

ITEM:

FUSE, 5A TO CONT BUS ABL

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DIST ASSY #3
- 3) R15 PANEL
- 4) R2 PANEL
- 5) FUSE, 5A TO CONT BUS AB1

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

TWINDING SALING: 3/3

PART NUMBER: ME451-0009-1021

32V73A2F83

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

REDUNDANCY SCREENS: A [1] B [F] C [P]

EFFECTS/RATIONALE:

LOCATION:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AW7H

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5791 ABORT: 3/1R

ITEM: FUSE, 5A TO CONT BUS AB2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DIST ASSY #3
- 3) R15 PANEL
- 4) R2 PANEL
- 5) FUSE, 5A TO CONT BUS AB2

6) 7)

8)

9) 05-6

CRITICALITIES

| HDW/FUNC | ABORT | HDW/FUNC |
|----------|-----------------------------|--|
| 3/3 | RTLS: | 3/1R |
| 3/1R | TAL: | 3/1R |
| 3/1R | AOA: | 3/1R |
| 3/1R | ATO: | 3/1R |
| 3/3 | | • |
| | 3/3 3/1R 3/1R 3/1R | 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V

32V73A2F84

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AW15G - NOT SHOWN

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

MDAC ID: 5792

FLIGHT: 3/1R ABORT: 3/1R

ITEM:

FUSE, 5A TO CONT BUS AB3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS C
- 2) MAIN DIST ASSY #3
- 3) R15 PANEL
- 4) R2 PANEL
- FUSE, 5A TO CONT BUS AB3

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION:

32V73A2F85

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AV7F

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE:

FLIGHT: 3/1R SUBSYSTEM: EPD&C 3/1R ABORT: 5793 MDAC ID:

FUSE, 5A TO CONT BUS BC1 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- MAIN DC BUS A
- MAIN DIST ASSY #1
- R15 PANEL 3)
- R2 PANEL 4)
- 5) FUSE, 5A TO CONT BUS BC1

6)

7)

8)

9) 05-6

CRITICALITIES

| A1/2 2 2 011 11 2 2 2 2 2 2 | | | |
|-----------------------------|---|--|--|
| HDW/FUNC | ABORT | HDW/FUNC | |
| 3/3 | RTLS: | 3/1R | |
| 3/1R | TAL: | 3/1R | |
| 3/1R | AOA: | 3/1R | |
| 3/1R | ATO: | 3/1R | |
| : 3/3 | | · | |
| | HDW/FUNC 3/3 3/1R 3/1R 3/1R | HDW/FUNC ABORT 3/3 RTLS: 3/1R TAL: 3/1R AOA: 3/1R ATO: | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A2F86

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AY22F

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5794 ABORT: 3/1R

ITEM: FUSE, 5A TO CONT BUS BC2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) FUSE, 5A TO CONT BUS BC2

6) 7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | • | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A2F87

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AY22E - NOT SHOWN

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C FLIGHT: 3/1R MDAC ID: 5795 ABORT: 3/1R

ITEM: FUSE, 5A TO CONT BUS BC3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS A
- 2) MAIN DIST ASSY #1
- 3) R15 PANEL
- 4) R2 PANEL
- 5) FUSE, 5A TO CONT BUS BC3

6)

7)

9) 05-6

CRITICALITIES

| | 75/2 # 2 71:22 2 2 2 2 | | |
|----------------|------------------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A2F88

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87

SUBSYSTEM: EPD&C FLIGHT: 3/1R ABORT: 3/1R MDAC ID: 5796

FUSE, 5A TO CONT BUS CA1 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- MAIN DIST ASSY #2
- 3) R15 PANEL
- 4) R2 PANEL
- 5) FUSE, 5A TO CONT BUS CAL

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A2F89

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AW11C - NOT SHOWN

HIGHEST CRITICALITY HDW/FUNC 3/11/87 DATE: FLIGHT: 3/1R SUBSYSTEM: EPD&C

3/1R ABORT: MDAC ID: 5797

FUSE, 5A TO CONT BUS CA2 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- MAIN DIST ASSY #2 2)
- 3) R15 PANEL
- R2 PANEL 4)
- FUSE, 5A TO CONT BUS CA2 5)

6)

7) 8)

9) 05-6

CRITICALITIES

| V.12.2.4.1.2.2.2.2.2 | | | |
|----------------------|----------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION:

32V73A2F90

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AY21B - NOT SHOWN

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

MDAC ID: 5798

FLIGHT: 3/1R ABORT: 3/1R

FUSE, 5A TO CONT BUS CA3

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) MAIN DC BUS B
- 2) MAIN DIST ASSY #2
- 3) R15 PANEL
- 4) R2 PANEL
- 5) FUSE, 5A TO CONT BUS CA3

7)

8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/1R |
| LIFTOFF: | 3/1R | TAL: | 3/1R |
| ONORBIT: | 3/1R | AOA: | 3/1R |
| DEORBIT: | 3/1R | ATO: | 3/1R |
| LANDING/SAFING: | 3/3 | | - |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A2F91

PART NUMBER: ME451-0009-1021

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

THIS FAILURE WOULD CAUSE THE LOSS OF ONE OF THREE POWER SOURCES TO ONE CONTROL BUSS. LOSS OF ALL POWER TO CONTROL BUSSES WOULD LIKELY CAUSE LOSS OF CREW/VEHICLE DUE TO INABILITY TO CONTROL CRITICAL LOADS.

REFERENCES: 76AW22A

DATE: 3/11/87 HIGHEST CRITICALITY HDW/FUNC SUBSYSTEM: EPD&C FLIGHT: 2/1R MDAC ID: 5799 ABORT: 2/1R

ITEM: FUSE, 1A TO MMCA-1 & 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS AB1
- 2) R13A2 PANEL
- 3) FUSE, 1A TO MMCA-1 & 2
- 4)
- 5)
- 6)
- 7)
- 8) 9) 05-6

CRITICALITIES

| | V1/2 2 2 V1.22 2 2 2 2 | | |
|----------------|------------------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 3/3 | ATO: | 2/1R |
| LANDING/SAFING | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A13A2F1
PART NUMBER: ME451-0018-0100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE PLBM AC BUS. CRITICAL LOADS HAVE DUAL POWER SOURCES. SECOND FAILURE WOULD NOT ALLOW PAYLOAD DOORS TO CLOSE. THIS COULD RESULT IN LOSS OF CREW/VEHICLE.

REFERENCES: 76BC14H

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C

FLIGHT: 2/1R

MDAC ID: 5800

ABORT:

2/1R

ITEM:

FUSE, 1A TO MMCA-1 & 2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS CA1
- 2) R13A2 PANEL
- 3) FUSE, 1A TO MMCA-1 & 2

4)

5)

6)

7) 8)

9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 3/3 | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A13A2F16

PART NUMBER: ME451-0018-0100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE PLBM AC BUS. CRITICAL LOADS HAVE DUAL POWER SOURCES. SECOND FAILURE WOULD NOT ALLOW PAYLOAD DOORS TO CLOSE. THIS COULD RESULT IN LOSS OF CREW/VEHICLE.

REFERENCES: 76BC14H

HIGHEST CRITICALITY HDW/FUNC DATE: 3/11/87 SUBSYSTEM: EPD&C FLIGHT: 2/1R

ABORT: 2/1R MDAC ID: 5801

FUSE, 1A TO MMCA-2 ITEM:

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC1
- 2) R13A2 PANEL
- 3) FUSE, lA TO MMCA-2
- 4)
- 5)
- 6)
- 7) 8)
- 9) 05-6

CRITTCALITTES

| | CIVITICALITIES | | |
|-----------------|----------------|-------|----------|
| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 3/3 | ATO: | 2/1R |
| LANDING/SAFING: | : 3/3 | | • |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A13A2F5 PART NUMBER: ME451-0018-0100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE PLBM AC BUS. CRITICAL LOADS HAVE DUAL POWER SOURCES. SECOND FAILURE WOULD NOT ALLOW PAYLOAD DOORS TO CLOSE. THIS COULD RESULT IN LOSS OF CREW/VEHICLE.

REFERENCES: 76BC14G

DATE:

3/11/87

HIGHEST CRITICALITY HDW/FUNC

SUBSYSTEM: EPD&C MDAC ID:

5802

FLIGHT: ABORT:

2/1R 2/1R

ITEM:

FUSE, 1A TO MMCA-2

FAILURE MODE: FAILS OPEN

LEAD ANALYST: K. SCHMECKPEPER SUBSYS LEAD: K. SCHMECKPEPER

BREAKDOWN HIERARCHY:

- 1) CONT BUS BC2
- 2) R13A2 PANEL
- FUSE, 1A TO MMCA-2
- 4)
- 5)
- 6) 7)
- 8)
- 9) 05-6

CRITICALITIES

| FLIGHT PHASE | HDW/FUNC | ABORT | HDW/FUNC |
|-----------------|----------|-------|----------|
| PRELAUNCH: | 3/3 | RTLS: | 3/3 |
| LIFTOFF: | 3/3 | TAL: | 3/3 |
| ONORBIT: | 2/1R | AOA: | 2/1R |
| DEORBIT: | 3/3 | ATO: | 2/1R |
| LANDING/SAFING: | 3/3 | | · |

REDUNDANCY SCREENS: A [1] B [F] C [P]

LOCATION: 32V73A13A2F27

PART NUMBER: ME451-0018-0100

CAUSES: CONTAMINATION, VIBRATION, MECH SHOCK, THERMAL STRESS

EFFECTS/RATIONALE:

FIRST FAILURE WOULD CAUSE THE LOSS OF ONE PLBM AC BUS. CRITICAL LOADS HAVE DUAL POWER SOURCES. SECOND FAILURE WOULD NOT ALLOW PAYLOAD DOORS TO CLOSE. THIS COULD RESULT IN LOSS OF CREW/VEHICLE.

REFERENCES: 76BC14G